

001209

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**REVIEW AND COMMAND ASSESSMENT
OF THE
INSTALLATION RESTORATION PROGRAM**

(RECAP)



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PRESENTED BY

BG SAMPSON H. BASS, JR.

ON

30 MARCH 1976

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INSTALLATION RESTORATION



iv

FIGURE 1

FIGURE 1 - INSTALLATION RESTORATION PROGRAM INTRODUCTION

IN THE LAST 30 YEARS OR MORE, THE ARMY HAS BEEN ENGAGED IN MANUFACTURING AND VARIOUS OTHER OPERATIONS AT A NUMBER OF INSTALLATIONS THROUGHOUT THE UNITED STATES. AS A RESULT OF THESE OPERATIONS, THE INSTALLATIONS HAVE BECOME CONTAMINATED WITH VARIOUS CHEMICAL, BIOLOGICAL, AND RADIOLOGICAL MATERIALS. THE CONTAMINANTS WERE DEPOSITED IN DISPOSAL BASINS, BURIAL PITS, TEST SITES, IMPACT RANGES, PRODUCTION FACILITIES, DEMILITARIZATION AREAS, AND STORAGE YARDS. ALTHOUGH SOME OF THESE AREAS WERE CONTAMINATED UNINTENTIONALLY THROUGH ACCIDENTAL SPILLS OR MUNITIONS DETERIORATING IN STORAGE, MOST OF THE CONTAMINATION STEMMED FROM INTENDED AND LEGITIMATE OPERATIONS. TO DATE, SOME 50 DARCOM INSTALLATIONS HAVE BEEN INITIALLY IDENTIFIED AS POSSIBLY HAVING SERIOUS CONTAMINATION PROBLEMS.

THE ARMY REALIZED, OF COURSE, THAT A PROGRAM TO RESTORE THESE INSTALLATIONS TO A POINT WHERE THEY WOULD BE SUITABLE FOR PUBLIC USE WOULD BE A TECHNICALLY COMPLEX AND COSTLY UNDERTAKING. THE TECHNOLOGY BASE WAS SHALLOW AND IN MANY AREAS THE STATE-OF-THE-ART WOULD HAVE TO BE ADVANCED. ESTIMATES OF COST AND TIME WERE SUBSTANTIAL.

AS A RESULT OF THE TECHNICAL COMPLEXITY, HIGH COST, POLITICAL VISIBILITY, AND INVOLVEMENT OF A WIDE RANGE OF FEDERAL AGENCIES, IN AUGUST 1975 THIS EFFORT WAS PLACED UNDER PROJECT MANAGEMENT CONTROL.

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FIGURE 1 - INSTALLATION RESTORATION PROGRAM INTRODUCTION

THE PROGRAM WAS ASSIGNED TO THE EXISTING OFFICE OF THE PROGRAM MANAGER FOR DEMILITARIZATION OF CHEMICAL MATERIEL AT ABERDEEN PROVING GROUND, MARYLAND.

THIS IS THE SECOND RECAP PRESENTATION ON THE INSTALLATION RESTORATION PROGRAM. THE FIRST RECAP BRIEFLY REVIEWED THE ORIGINS OF THE ARMY'S CONTAMINATED AREAS AND HOW THE ARMY ULTIMATELY CAME TO ESTABLISH A PROJECT MANAGER FOR INSTALLATION RESTORATION. THIS WAS FOLLOWED BY A DETAILED PORTRAYAL OF THE RESTORATION PROJECTS AT ROCKY MOUNTAIN ARSENAL AND WELDON SPRING CHEMICAL PLANT. ALSO, THE PROJECT FOR CONDUCTING "OTHER SITE ASSESSMENTS" WAS HIGHLIGHTED.

TODAY'S PRESENTATION WILL AGAIN ADDRESS THE ROCKY MOUNTAIN ARSENAL, WELDON SPRING CHEMICAL PLANT, AND OTHER SITE ASSESSMENTS PROJECTS IN DETAIL. IN ADDITION, THE PINE BLUFF ARSENAL PROJECT, ASSIGNED TO THE PROJECT MANAGER DURING THIS RECAP PERIOD, WILL BE DISCUSSED IN SOME DETAIL. ALSO, THE IMPACT OF FUNDING CONSTRAINTS WILL BE HIGHLIGHTED.

INSTALLATION RESTORATION PROGRAM OVERALL PROGRAM HIGHLIGHTS

- ORGANIZATIONAL ACCOMPLISHMENTS
- PROGRAM EMPHASIS CHANGES
- FUNDING CONSTRAINTS

FIGURE 1B

ORGANIZATIONAL ACCOMPLISHMENTS

AS STATED IN THE LAST RECAP, THE INSTALLATION RESTORATION MISSION WAS ASSUMED WITH MINIMUM DISRUPTION TO THE EXISTING CHEMICAL DEMILITARIZATION ORGANIZATION. SUPPORT ELEMENTS WERE STRUCTURED TO SERVICE BOTH THE DEMILITARIZATION AND INSTALLATION RESTORATION PROGRAMS. PENDING APPROVAL OF THE REVISED TDA, WHICH CALLS FOR AN EVENTUAL INCREASE OF 109 PERSONNEL SPACES, A CADRE OF 12 PMO PERSONNEL WERE ASSIGNED TO THE INSTALLATION RESTORATION PROGRAM TO FORM THE NUCLEUS OF THE ORGANIZATION. SINCE THE LAST RECAP, THIS NUMBER HAS EXPANDED TO 17. PLANNING CALLS FOR A GRADUAL ACQUISITION OF THE ADDITIONAL SPACES CONSISTENT WITH PROJECTED WORKLOAD AND ATTAINMENT OF FULL STAFFING BY THE END OF FY78. HOWEVER, THIS PLAN WILL BE STRONGLY INFLUENCED BY FUNDING AVAILABILITY. THE TDA IS PENDING APPROVAL AT DARCOM AND IS EXPECTED TO BE FORWARDED TO HQDA BY THE END OF MARCH 1976. SELECTED PERSONNEL AT EDGEWOOD ARSENAL, ROCKY MOUNTAIN ARSENAL, AND US ARMY MEDICAL RESEARCH AND DEVELOPMENT COMMAND (USAMRDC) HAVE ALSO BEEN DEDICATED TO THE PROGRAM.

SINCE THE LAST RECAP, ADDITIONAL EXPERTISE HAS BEEN BROUGHT TO BEAR ON THE PROGRAM. THIS INCLUDES INVOLVEMENT OF THE CORPS OF ENGINEERS' WATERWAYS EXPERIMENT STATION (WES), THE ENVIRONMENTAL PROTECTION AGENCY'S PESTICIDE LABORATORIES, US ARMY ENVIRONMENTAL HYGIENE AGENCY (USAEHA), AND SEVERAL PRIVATE CONTRACTORS. THE SPECIFIC ACTIVITIES OF THESE ORGANIZATIONS WILL BE DISCUSSED IN

INSTALLATION RESTORATION PROGRAM OVERALL PROGRAM HIGHLIGHTS

- ORGANIZATIONAL ACCOMPLISHMENTS
- PROGRAM EMPHASIS CHANGES
- FUNDING CONSTRAINTS

FIGURE 1B

FIGURE 1B - INSTALLATION RESTORATION OVERALL PROGRAM HIGHLIGHTS

ORGANIZATIONAL ACCOMPLISHMENTS (CONTINUED)

MORE DETAIL UNDER THE HIGHLIGHTS SECTION OF THE INDIVIDUAL PROJECTS. ADDITIONALLY, PROGRAM VISIBILITY HAS BEEN INCREASED THROUGH NUMEROUS BRIEFINGS TO HQDA/DOD AND COORDINATION WITH THE MAJOR ARMY COMMANDS.

PROGRAM EMPHASIS CHANGES

AS STATED IN THE LAST RECAP, ROCKY MOUNTAIN ARSENAL AND WELDON SPRING CHEMICAL PLANT WERE IDENTIFIED AS FIRST AND SECOND PRIORITY, RESPECTIVELY, FOR RESTORATION. IN ADDITION, ROCKY MOUNTAIN ARSENAL WAS TO BE USED AS A MODEL TO DEVELOP TECHNOLOGY WHICH WOULD BE APPLICABLE TO FUTURE RESTORATION PROJECTS, AND THE PROGRAM WAS STRUCTURED ALONG THOSE LINES. ALTHOUGH THERE HAVE BEEN NO FORMAL CHANGES TO THAT APPROACH, INDICATIONS FROM OSD, WHICH INCLUDE REDUCED FUNDING AND INCREASED CONCERN FOR OFF-POST CONTAMINATION CONTROL, SIGNAL A POTENTIAL CHANGE IN PROGRAM EMPHASIS. OSD IS RELUCTANT TO FULLY SUPPORT RESTORATION EFFORTS UNTIL AN INSTALLATION IS MARKED FOR EXCESS. THEY HAVE, HOWEVER, EMPHASIZED THE NEED TO CONTROL OFF-POST CONTAMINATION, AND FUNDING SUPPORT HAS REFLECTED THIS POSITION. SINCE THERE ARE NO FORMAL PLANS TO EXCESS ROCKY MOUNTAIN ARSENAL, OSD DECREMENTED THE RDT&E FUNDS TO SUPPORT ONLY CURRENT ACTIVITIES RELATING TO THE CONTROL OF OFF-POST MIGRATION. DESPITE THE REDUCED

INSTALLATION RESTORATION PROGRAM OVERALL PROGRAM HIGHLIGHTS

- ORGANIZATIONAL ACCOMPLISHMENTS
- PROGRAM EMPHASIS CHANGES
- FUNDING CONSTRAINTS

FIGURE 1B

FIGURE 1B - INSTALLATION RESTORATION OVERALL PROGRAM HIGHLIGHTS

PROGRAM EMPHASIS CHANGES (CONTINUED)

FUNDING LEVELS AND THE INTEGRATION OF THE OFF-POST MIGRATION CONTROL TASKS INTO THE OVERALL TECHNOLOGY EFFORT, THE MAJOR PROJECT OBJECTIVES REMAIN INTACT.

FUNDING CONSTRAINTS

FY77 RDTE BUDGET REQUIREMENTS OF \$10.2 MILLION AND OMA REQUIREMENTS OF \$6.6 MILLION FOR INSTALLATION RESTORATION WERE APPROVED BY DA AND SUBMITTED TO OSD. OSD DECREMENTED THE RDTE BUDGET TO THE \$3.0 MILLION LEVEL FOR BOTH FY77 AND FY78 WHICH WILL RESTRICT STANDARDS DEVELOPMENT EFFORT TO THE CONTINUING WORK ON THE TWO CONTAMINANTS INITIALLY IDENTIFIED AS MIGRATING OFF ROCKY MOUNTAIN ARSENAL. AN APPEAL OF THIS ACTION BY HQDA WAS NOT FAVORABLY CONSIDERED BY OSD. RDTE UNFUNDED REQUIREMENTS OF \$0.2 MILLION HAVE BEEN IDENTIFIED FOR FY77, \$2.5 MILLION FOR FY77, \$6.4 MILLION FOR FY78, AND \$2.2 MILLION FOR FY79. THESE UNFUNDED AMOUNTS ARE PRIMARILY FOR INCREASING SUPPORT OF THE USAMRDC STANDARDS DEVELOPMENT EFFORT IN SUPPORT OF THE RMA PROJECT. INCLUDED IN THIS WORK ARE PROBLEM DEFINITION AND TOXICITY STUDIES ON A NUMBER OF CONTAMINANTS SUSPECTED OF MIGRATING OFF THE INSTALLATION.

FY76 OMA FUNDING CONSTRAINTS HAVE RESULTED IN A SHORTFALL OF \$1.0 MILLION IN OMA MISSION FUNDS FOR SUPPORT OF THE INSTALLATION RESTORATION PROGRAM. THE PRINCIPAL IMPACT OF THIS REDUCTION, FROM \$2.4

INSTALLATION RESTORATION PROGRAM OVERALL PROGRAM HIGHLIGHTS

- ORGANIZATIONAL ACCOMPLISHMENTS
- PROGRAM EMPHASIS CHANGES
- FUNDING CONSTRAINTS

FIGURE 1B

FIGURE 1B - INSTALLATION RESTORATION OVERALL PROGRAM HIGHLIGHTS

FUNDING CONSTRAINTS (CONTINUED)

MILLION TO \$1.4 MILLION, HAS BEEN TO POSTPONE INITIATION OF THE COMPREHENSIVE SOIL SURVEY AT ROCKY MOUNTAIN ARSENAL UNTIL FY77 AND TO DEFER START OF THE "OTHER SITE ASSESSMENTS" PROJECT UNTIL FY7T.

INSTALLATION RESTORATION PROGRAM OVERALL TASK LIST

TASK	STATUS
ROCKY MOUNTAIN ARSENAL	PHASE I TECH DEV
WELDON SPRING CHEMICAL PLANT	INTERIM ASSESSMENT ★
PINE BLUFF ARSENAL	COMPLETED
OTHER SITE ASSESSMENTS	PROJECT INTEGRATION ★
	PLANNING

★ CHANGES SINCE LAST RECAP

FIGURE 2

FIGURE 2 - INSTALLATION RESTORATION PROGRAM OVERALL TASK LIST

SHOWN HERE ARE THE MAJOR TASKS ASSOCIATED WITH THE INSTALLATION RESTORATION PROGRAM. AS PREVIOUSLY INDICATED, ROCKY MOUNTAIN ARSENAL AND WELDON SPRING CHEMICAL PLANT HAVE BEEN ASSIGNED PRIORITY FOR RESTORATION BY DA. INITIAL RESEARCH INDICATES THAT MANY ADDITIONAL ARMY INSTALLATIONS MAY REQUIRE SOME DEGREE OF RESTORATION. THE OVERALL APPROACH FOR THESE INITIAL TASKS, THEREFORE, IS DESIGNED TO DEVELOP THE NECESSARY METHODOLOGY AND TECHNOLOGY FOR OTHER INSTALLATION ASSESSMENT AND RESTORATION USING ROCKY MOUNTAIN ARSENAL AND WELDON SPRING CHEMICAL PLANT AS MODELS.

THERE HAVE BEEN TWO CHANGES TO THE OVERALL TASK LIST SINCE THE LAST RECAP. THE INTERIM ASSESSMENT OF WELDON SPRING CHEMICAL PLANT WAS COMPLETED, COORDINATED, AND SUBMITTED TO HQDA. DUE TO FUNDING LIMITATIONS, THE ASSESSMENT WAS LIMITED TO A GENERAL DEFINITION OF ONSITE AND OFFSITE RADIOLOGICAL AND EXPLOSIVES CONTAMINATION. THIS SURVEY WAS A FOLLOW-ON TO A LIMITED RECORDS SEARCH AND ONSITE SURVEY PREVIOUSLY COMPLETED. FUTURE ACTIONS ARE DEPENDENT UPON HQDA DIRECTION TO PROCEED IN FY77

WITH A DETAILED SURVEY AND ASSESSMENT OF ALTERNATIVES FOR DISPOSITION OF WELDON SPRING CHEMICAL PLANT. THE OTHER TASK LIST CHANGE CONCERNS THE ASSIGNMENT OF THE PINE BLUFF ARSENAL INSTALLATION RESTORATION PROJECT TO THE OVERALL INSTALLATION RESTORATION PROGRAM WHICH WAS FORMALIZED DURING THIS RECAP PERIOD. THE PINE BLUFF ARSENAL PROJECT WAS BEGUN IN FY74 AND CONSISTED OF A SURVEY OF SOME 33 AREAS ON THE ARSENAL SUSPECTED OF CONTAINING CONTAMINATION RESULTING FROM PREVIOUS OPERATIONS. THAT

INSTALLATION RESTORATION PROGRAM OVERALL TASK LIST

TASK	STATUS
ROCKY MOUNTAIN ARSENAL	PHASE I TECH DEV
WELDON SPRING CHEMICAL PLANT	INTERIM ASSESSMENT ★ COMPLETED
PINE BLUFF ARSENAL	PROJECT INTEGRATION ★
OTHER SITE ASSESSMENTS	PLANNING

★ CHANGES SINCE LAST RECAP

FIGURE 2

FIGURE 2 - INSTALLATION RESTORATION PROGRAM OVERALL TASK LIST

SURVEY IDENTIFIED DDT AS A CONTAMINANT MIGRATING OFF THE INSTALLATION AND A PROGRAM WAS UNDERTAKEN TO CONTROL THIS MIGRATION. SIMILARITY OF THE PINE BLUFF ARSENAL PROJECT OBJECTIVES WITH THE OVERALL INSTALLATION RESTORATION PROGRAM RESULTED IN THE ULTIMATE DECISION TO PLACE THE PINE BLUFF ARSENAL EFFORT UNDER THE INSTALLATION RESTORATION PROGRAM.

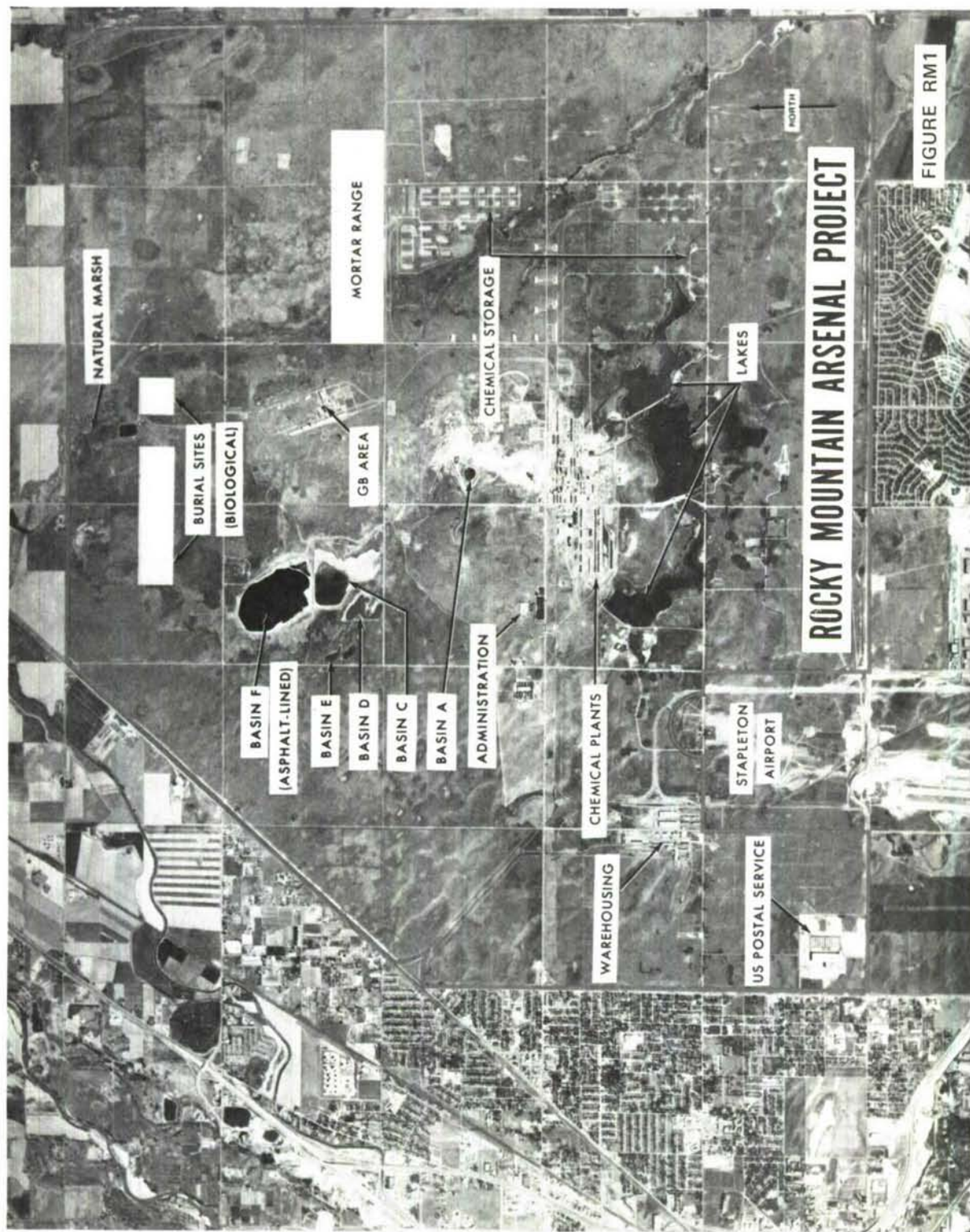


FIGURE RM1

FIGURE RM1 - ROCKY MOUNTAIN ARSENAL PROJECT

OVER THE YEARS VARIOUS TYPES OF LAND CONTAMINATION HAVE RESULTED FROM THE MANUFACTURING AND DISPOSAL OPERATIONS AT ROCKY MOUNTAIN ARSENAL. THESE INCLUDE PESTICIDE CONTAMINATION IN THE SOUTHERN LAKES; PESTICIDE AND CHEMICAL AGENT CONTAMINATION IN THE VARIOUS STORAGE AREAS AND MANUFACTURING FACILITIES; UNEXPLODED ORDNANCE CONTAMINATION IN THE MORTAR RANGE; AND ANTICROP AGENT WASTES IN THE BURIAL SITES.

THERE IS A PROBLEM WITH CONTAMINANTS MIGRATING OFF THE INSTALLATION. DURING THE EARLY PRODUCTION OPERATIONS, THE WASTE PRODUCTS FROM THE BATCH REACTORS WERE DISPOSED OF BY DUMPING IN OPEN, UNLINED BASINS LOCATED ON THE ARSENAL, AN ACCEPTED WASTE DISPOSAL METHOD AT THE TIME. IN 1956, AN ASPHALT LINED BASIN WAS CONSTRUCTED AND USED FOR DISPOSAL OF WASTES. THE PRIOR PRACTICE OF DUMPING INTO UNLINED BASINS, HOWEVER, ALLOWED FOR THE SEEPAGE OF SOLUBLE WASTES INTO THE GROUNDWATER SYSTEM. THESE WASTES, WHICH INCLUDE DIISOPROPYLMETHYLPHOSPHONATE (DIMP), A BY-PRODUCT FROM NERVE AGENT PRODUCTION, AND DICYCLOPENTADIENE (DCPD), AN INSECTICIDE MANUFACTURING INTERMEDIATE, HAVE MIGRATED IN THE GROUNDWATER AND HAVE EVEN BEEN DETECTED OFF THE INSTALLATION. THIS DISCOVERY PROMPTED THE COLORADO DEPARTMENT OF HEALTH TO ISSUE A "CEASE AND DESIST" ORDER TO ROCKY MOUNTAIN ARSENAL AND SHELL CHEMICAL COMPANY TO CONTROL THIS MIGRATION. SEPARATE PROGRAMS TO CONTAIN OFF-POST CONTAMINATION MIGRATION AND TO DECONTAMINATE AND RESTORE ROCKY MOUNTAIN ARSENAL HAD BEEN FORMULATED. AS PREVIOUSLY STATED, THESE EFFORTS HAVE NOW BEEN INTEGRATED AS A RESULT OF FUNDING RESTRICTIONS.

ROCKY MOUNTAIN ARSENAL

PROJECT TASK LIST

TASK	STATUS
SURVEY & TECHNOLOGY ACQUISITION (PHASE I)	
SAMPLING AND ANALYSIS	PLANNING
ECOLOGICAL SAMPLING	CONTINUING
STANDARDS DEVELOPMENT	CONTINUING
LAND USE MODELING	DEVELOPMENT
DECON TECHNOLOGY DEVELOPMENT	LAB/FIELD STUDY ★
DATA HANDLING PROGRAM	FILE DEVELOPMENT ★
DESIGN AND CONSTRUCTION OF FACILITIES AND EQUIP (PHASE II)	
LONG RANGE	LONG RANGE
LONG RANGE	LONG RANGE
★ CHANGES SINCE LAST RECAP	FIGURE RM2

FIGURE RM2 - ROCKY MOUNTAIN ARSENAL PROJECT TASK LIST

LISTED HERE ARE THE MAJOR TASKS ASSOCIATED WITH THE ROCKY MOUNTAIN ARSENAL PROJECT. THIS PROJECT IS DIVIDED INTO THREE PHASES. PHASE I IS THE SURVEY AND TECHNOLOGY ACQUISITION EFFORT CONSISTING OF SIX DISTINCT BUT INTERRELATED PARTS. PHASE II IS THE DESIGN AND CONSTRUCTION OF DECONTAMINATION FACILITIES AND EQUIPMENT. PHASE III IS THE ACTUAL OPERATION OF THE DECONTAMINATION FACILITIES.

SINCE PHASES II AND III ARE TOTALLY DEPENDENT UPON THE RESULTS OF PHASE I, THESE PHASES WILL NOT BE SPECIFICALLY ADDRESSED IN THE RECAP UNTIL THE RESEARCH IS SUFFICIENTLY ADVANCED AND DECONTAMINATION PROCESSES ARE SELECTED.

PHASE I INCLUDES: (1) A SAMPLING AND ANALYSIS PROGRAM TO DETERMINE THE TYPES AND EXTENT OF CONTAMINANTS; (2) AN ECOLOGICAL SURVEY; (3) THE DEVELOPMENT OF STANDARDS TO ESTABLISH ACCEPTABLE LEVELS OF CONTAMINATION AND EMISSIONS; (4) DEVELOPMENT OF A LAND USE MODEL (COMPUTER PROGRAM) TO EVALUATE LAND USE OPTIONS AGAINST STANDARDS AND COSTS; (5) DEVELOPMENT OF DECONTAMINATION TECHNOLOGY, TO INCLUDE PILOTING; AND (6) ESTABLISHMENT OF A COMPUTER-OPERATED DATA HANDLING PROGRAM TO PERMIT STORAGE AND RETRIEVAL OF INFORMATION BY ALL MAJOR PROGRAM PARTICIPANTS.

THREE CHANGES HAVE BEEN MADE TO THE TASK LIST SINCE LAST RECAP. OFF-POST CONTAMINATION CONTROL HAS BEEN ELIMINATED AS A SEPARATE TASK UNDER PHASE I AND HAS BEEN INTEGRATED INTO THE SIX TASK AREAS.

ROCKY MOUNTAIN ARSENAL PROJECT TASK LIST

TASK	STATUS
SURVEY & TECHNOLOGY ACQUISITION (PHASE I)	
SAMPLING AND ANALYSIS	PLANNING
ECOLOGICAL SAMPLING	CONTINUING
STANDARDS DEVELOPMENT	CONTINUING
LAND USE MODELING	DEVELOPMENT
DECON TECHNOLOGY DEVELOPMENT	LAB/FIELD STUDY ★
DATA HANDLING PROGRAM	FILE DEVELOPMENT ★
DESIGN AND CONSTRUCTION OF FACILITIES AND EQUIP (PHASE II)	LONG RANGE
ARSENAL RESTORATION (PHASE III)	LONG RANGE
★ CHANGES SINCE LAST RECAP	FIGURE RM2

FIGURE RM2 - ROCKY MOUNTAIN ARSENAL PROJECT TASK LIST

THE INDIVIDUAL TASKS NOW EMPHASIZE OFF-POST CONTAMINATION CONTROL, AS WELL AS THE DEVELOPMENT OF RESTORATION TECHNOLOGY. IN THE DECONTAMINATION TECHNOLOGY DEVELOPMENT TASK, THE EFFORT HAS PROGRESSED FROM A LITERATURE SEARCH TO THE CONDUCT OF LABORATORY AND FIELD STUDIES. IN THE DATA HANDLING AREA, ANALYSIS OF SYSTEM VARIABLES HAS BEEN COMPLETED AND WORK IS PROGRESSING TOWARD DEVELOPMENT OF THE DETAILED DATA FILE.

ROCKY MOUNTAIN ARSENAL

PROJECT HIGHLIGHTS

ACTIVITIES SINCE LAST RECAP

- SAMPLING AND ANALYSIS
 - ANALYTICAL LABORATORY ACTIVITIES
 - MIGRATING CONTAMINANT IDENTIFICATION
 - GROUNDWATER FLOW DEFINITION
 - VERIFICATION OF AERIAL SURVEY DATA
 - USGS COMPUTER MODELING
 - UXO DETECTION STUDY DISCONTINUED

FIGURE RM3

FIGURE RM3 - ROCKY MOUNTAIN ARSENAL PROJECT HIGHLIGHTS

ACTIVITIES SINCE LAST RECAP

SAMPLING AND ANALYSIS

THE SAMPLING AND ANALYSIS PROGRAM WAS DEVELOPED TO IDENTIFY ALL CONTAMINANTS AT ROCKY MOUNTAIN ARSENAL AND ESTABLISH THE SPECIFIC BOUNDARIES (THREE DIMENSIONAL PROFILE) OF CONTAMINATION. THIS PROGRAM IS A COMPREHENSIVE SURVEY WHICH WILL PROVIDE A DATA BASE FOR ALL SUBSEQUENT ACTIONS AT ROCKY MOUNTAIN ARSENAL. SOIL, WATER, AND BUILDINGS WILL BE SAMPLED AND THE SAMPLES ANALYZED FOR CONTAMINANTS. AS AN EXAMPLE, THE SOIL SAMPLING PROGRAM INVOLVES THE TAKING OF APPROXIMATELY 10,000 CORE SAMPLES. EACH CORE SAMPLE WILL BE SUBJECTED TO A BATTERY OF 40-50 CHEMICAL ANALYSES. EFFICIENT PROCEDURES MUST BE DEVELOPED TO SAMPLE THE SOIL. COMPLEX EXTRACTION AND ANALYTICAL TECHNIQUES MUST BE AUTOMATED TO HANDLE SUCH A LARGE WORKLOAD. PROGRESS SINCE THE LAST RECAP IS REVIEWED IN THE FOLLOWING DISCUSSION.

THE RENOVATION OF THE ANALYTICAL LABORATORY TO BE USED TO SUPPORT THE COMPREHENSIVE SURVEY WAS INITIATED AND WILL BE COMPLETED IN EARLY APRIL ON SCHEDULE. MAJOR PIECES OF ANALYTICAL EQUIPMENT HAVE BEEN PROCURED AND WILL BE INSTALLED UPON COMPLETION OF THE LABORATORY.

THE ANALYTICAL SYSTEMS COMMITTEE COMPOSED OF CHEMISTS FROM THE US ARMY MEDICAL RESEARCH AND DEVELOPMENT COMMAND, US ARMY ENVIRONMENTAL HYGIENE AGENCY, EDGEWOOD ARSENAL, PINE BLUFF ARSENAL, AND ROCKY MOUNTAIN

ROCKY MOUNTAIN ARSENAL

PROJECT HIGHLIGHTS

ACTIVITIES SINCE LAST RECAP

- SAMPLING AND ANALYSIS
 - ANALYTICAL LABORATORY ACTIVITIES
 - MIGRATING CONTAMINANT IDENTIFICATION
 - GROUNDWATER FLOW DEFINITION
 - VERIFICATION OF AERIAL SURVEY DATA
 - USGS COMPUTER MODELING
 - UXO DETECTION STUDY DISCONTINUED

FIGURE RM3

FIGURE RM3 - ROCKY MOUNTAIN ARSENAL PROJECT HIGHLIGHTS

SAMPLING AND ANALYSIS (CONTINUED)

ARSENAL WAS ESTABLISHED TO REVIEW AND RECOMMEND THE ANALYTICAL SCHEME, THE QUALITY CONTROL PLAN, AND THE TOTAL ANALYTICAL INSTRUMENTATION ACQUISITION. RECENT COMMITTEE ACTIONS INCLUDED: (1) REVIEW OF TENTATIVE WATER POLLUTANT LIMIT VALUES TO DETERMINE ANALYTICAL METHODS REQUIREMENTS; (2) DETERMINATION OF EQUIPMENT NEEDS FOR THE RMA LABORATORY; (3) ADOPTION OF A QUALITY CONTROL PROGRAM DEVELOPMENT PLAN FOR THE COMPREHENSIVE SURVEY; AND (4) INITIATION OF A PROGRAM FOR THE IDENTIFICATION OF UNKNOWNNS TO INCLUDE ANALYSIS OF RMA GROUNDWATER SAMPLES AND TRAINING OF EDGEWOOD ARSENAL AND RMA PERSONNEL IN PROCEDURES FOR UNKNOWN IDENTIFICATION AT EPA LABS IN ATHENS, GEORGIA, AND TRIANGLE PARK, NORTH CAROLINA.

SINCE THE LAST RECAP, THREE ADDITIONAL CONTAMINANTS WERE IDENTIFIED IN THE RMA GROUNDWATER. THESE INCLUDE PARA CHLOROPHENYL METHYL SULFIDE, PARA CHLOROPHENYL METHYL SULFOXIDE, AND PARA CHLOROPHENYL METHYL SULFONE. THESE COMPOUNDS WERE USED BY SHELL CHEMICAL COMPANY TO MAKE PLANAVIN PRIOR TO

MARCH 1975 WHEN PRODUCTION OF THIS HERBICIDE WAS DISCONTINUED. THESE COMPOUNDS HAVE BEEN ADDED TO THE STANDARDS DEVELOPMENT PROBLEM DEFINITION PROGRAM. HOWEVER, CONDUCT OF TOXICOLOGY WORK IS DEPENDENT UPON RECEIPT OF REQUESTED FUNDING. IN ADDITION, THERE ARE OTHER CONTAMINANTS SUSPECTED OF MIGRATING OFF THE INSTALLATION BOUNDARIES. HOWEVER, THESE ADDITIONAL CONTAMINANTS WILL NOT BE INCLUDED IN THE PROJECT UNTIL IT IS VERIFIED THAT THEY ARE, IN FACT, ARSENAL RELATED AND NOT IN THE GROUNDWATER ENTERING THE ARSENAL.

ROCKY MOUNTAIN ARSENAL

PROJECT HIGHLIGHTS

ACTIVITIES SINCE LAST RECAP

- SAMPLING AND ANALYSIS
 - ANALYTICAL LABORATORY ACTIVITIES
 - MIGRATING CONTAMINANT IDENTIFICATION
 - GROUNDWATER FLOW DEFINITION
 - VERIFICATION OF AERIAL SURVEY DATA
 - USGS COMPUTER MODELING
 - UXO DETECTION STUDY DISCONTINUED

FIGURE RM3

FIGURE RM3 - ROCKY MOUNTAIN ARENAL PROJECT HIGHLIGHTS

SAMPLING AND ANALYSIS (CONTINUED)

IN COOPERATION WITH SHELL CHEMICAL COMPANY AND THE COLORADO HEALTH AUTHORITIES, AN EXTENSIVE WELL SAMPLING PROGRAM WAS INITIATED ON THE ARSENAL AND TO THE NORTH OF THE ARSENAL TO IDENTIFY AND QUANTIFY MIGRATION OF CONTAMINANTS IN GROUNDWATER. THE WATER MONITORING PROGRAM HAS BEEN EXPANDED TO A 360° COVERAGE AROUND RMA. THE PROGRAM IS DESIGNED TO NOT ONLY IDENTIFY CONTAMINANTS LEAVING THE ARSENAL TO THE NORTH AND WEST BUT ALSO ESTABLISH A BACKGROUND LEVEL OF ANY CONTAMINATION ENTERING THE INSTALLATION BOUNDARIES. THIS PROGRAM WAS INITIATED IN MARCH 1976.

AN ATTEMPT WAS MADE TO DRILL WELLS IN THE BEDROCK DRAW NORTHWEST OF BASIN "A" IN AN EFFORT TO PUMP THE GROUNDWATER TO A LINED BASIN, THUS ELIMINATING THE MIGRATION OF CONTAMINATED GROUNDWATER FROM THE BASIN "A" AREA. THE WELLS DID NOT PRODUCE SUFFICIENT WATER. ADDITIONAL STUDIES HAVE BEEN CONDUCTED TO DEFINE THE GROUND WATER FLOW PATTERNS IN AND AROUND THE ARSENAL. THE COMPLETE UNDERSTANDING OF GROUNDWATER FLOW IS ESSENTIAL PRIOR TO IMPLEMENTING MAJOR CONTAINMENT OR TREATMENT PROCESSES. FIFTY-FOUR TEST HOLES WERE DRILLED TO DETERMINE SOIL AND GROUNDWATER PROFILES. THE DATA INDICATED THAT PUMP WELLS WOULD NOT BE EFFECTIVE TO THE NORTHWEST OF BASIN "A" AS PREVIOUSLY THOUGHT, AND OTHER SYSTEMS, SUCH AS PUMPING TRENCHES, SHOULD BE DESIGNED IF PUMPING THE GROUNDWATER IS REQUIRED. ALSO, THE DRILLING PROGRAM SHOWED THAT GROUNDWATER PATTERNS AT RMA ARE MORE COMPLEX THAN INITIAL

ROCKY MOUNTAIN ARSENAL

PROJECT HIGHLIGHTS

ACTIVITIES SINCE LAST RECAP

- SAMPLING AND ANALYSIS
 - ANALYTICAL LABORATORY ACTIVITIES
 - MIGRATING CONTAMINANT IDENTIFICATION
 - GROUNDWATER FLOW DEFINITION
 - VERIFICATION OF AERIAL SURVEY DATA
 - USGS COMPUTER MODELING
 - UXO DETECTION STUDY DISCONTINUED

FIGURE RM3

FIGURE RM3 - ROCKY MOUNTAIN ARSENAL PROJECT HIGHLIGHTS

SAMPLING AND ANALYSIS (CONTINUED)

DATA HAD INDICATED. TO DEFINE THESE CONDITIONS, THE WATERWAYS EXPERIMENT STATION WILL PERFORM A COMPLETE BEDROCK PROFILE BEGINNING IN FY7T. SEVEN LYSIMETERS HAVE ALSO BEEN INSTALLED IN THE GROUNDWATER SYSTEM AT DIFFERENT DEPTHS AND SAMPLED IN EFFORTS TO IDENTIFY ANY STRATIFICATION OF CONTAMINATION THAT MAY EXIST. STRATIFICATION OF CONTAMINATION COULD REDUCE THE AMOUNT OF WATER REQUIRING TREATMENT OR CONTAINMENT AND THEREBY REDUCE COSTS.

A GROUND SURVEY WHICH INCLUDES SOIL CHEMISTRY ANALYSES TO DETERMINE CAUSES OF DISTRESSED VEGETATION PATTERNS IDENTIFIED IN A PRIOR AERIAL SURVEY WAS CONTINUED. THIS SURVEY IS BEING CONDUCTED IN TWO PARTS TO SAMPLE AT DIFFERENT SEASONS OF THE YEAR (FALL AND SPRING) AND WILL BE COMPLETED IN AUGUST 1976. RESULTS FROM THE FALL SURVEY ARE CURRENTLY BEING ANALYZED BY THE CONTRACTOR.

THE US GEOLOGICAL SURVEY (USGS) COMPUTER MODELING WORK TO PREDICT THE FUTURE MIGRATION OF CONTAMINANTS CONTINUED. THE FIRST MODEL, COMPLETED 30 OCTOBER 1975, CAN BE USED TO PREDICT THE MIGRATION OF DIMP WITHIN THE IMMEDIATE VICINITY OF THE ARSENAL. THE SECOND MODEL, COMPLETED IN JANUARY 1976, EXPANDED THE GEOGRAPHICAL LIMITS OF THE FIRST MODEL FOR SIMILAR CONTAMINATION MIGRATION PREDICTION NORTH AND WEST OF THE ARSENAL. PART III OF THIS STUDY, WHICH IS NOW UNDERWAY, INCLUDES THE USE OF THESE

ROCKY MOUNTAIN ARSENAL

PROJECT HIGHLIGHTS

ACTIVITIES SINCE LAST RECAP

- SAMPLING AND ANALYSIS
 - ANALYTICAL LABORATORY ACTIVITIES
 - MIGRATING CONTAMINANT IDENTIFICATION
 - GROUNDWATER FLOW DEFINITION
 - VERIFICATION OF AERIAL SURVEY DATA
 - USGS COMPUTER MODELING
 - UXO DETECTION STUDY DISCONTINUED

FIGURE RM3

FIGURE RM3 - ROCKY MOUNTAIN ARSENAL PROJECT HIGHLIGHTS

SAMPLING AND ANALYSIS (CONTINUED)

MODELS TO SIMULATE THE EFFECTS OF PROPOSED CONTAINMENT AND TREATMENT PLANS SUCH AS CONSTRUCTION OF A BENTONITE DAM OR PUMPING TRENCHES.

PREVIOUSLY, A LIMITED STUDY TO DETERMINE METHODS OF LOCATING UNEXPLODED ORDNANCE IN THE FIRING RANGE AT RMA WAS PLANNED. THIS EFFORT WAS TO BE ACCOMPLISHED BY PICATINNY ARSENAL. HOWEVER, BECAUSE OF THE EMPHASIS ON LOCATION AND CONTAINMENT OF MIGRATING CONTAMINANTS, THE STUDY HAS BEEN DEFERRED AND THE RESOURCES REALIGNED TO HIGHER PRIORITY EFFORTS.

ROCKY MOUNTAIN ARSENAL

PROJECT HIGHLIGHTS

ACTIVITIES SINCE LAST RECAP (CONTINUED)

- ECOLOGICAL SAMPLING
 - VEGETATION SURVEY ACTIVITIES
 - PLANT/ANIMAL SPECIES IDENTIFICATION
- STANDARDS DEVELOPMENT
 - PROBLEM DEFINITION STUDY EXTENSION
 - CORING AND ANALYSIS
 - DIMP AND DCPD TOXICOLOGY STUDIES
- LAND USE MODEL

FIGURE RM3

FIGURE RM3 - ROCKY MOUNTAIN ARSENAL PROJECT HIGHLIGHTS

ECOLOGICAL SAMPLING

THE ECOLOGICAL SAMPLING PROGRAM INVOLVES THE INVENTORY AND MONITORING OF FREE LIVING ANIMALS AND PLANTS AT ROCKY MOUNTAIN ARSENAL. THIS PROGRAM IS ESSENTIAL BECAUSE OF THE POSSIBILITY OF REDIRECTING GROUND WATER FLOW AND DISTURBING LARGE LAND MASS AREAS DURING THE RESTORATION PROGRAM. THIS ECOLOGICAL SURVEY WILL PROVIDE AN ECOLOGICAL DATA BASE FOR ASSESSING THE DEGREE OF CONTAMINATION, FOR EVALUATING SYNERGISM AMONG POLLUTANTS, AND FOR EVALUATING THE EFFECTIVENESS OF THE RESTORATION PROGRAM. THIS INFORMATION IS ALSO REQUIRED AS INPUT TO THE ENVIRONMENTAL IMPACT STATEMENT.

A PRELIMINARY VEGETATION SURVEY HAS BEEN CONDUCTED AND A GENERAL VEGETATIVE MAP COMPLETED. A VEGETATION SURVEY PROTOCOL FOR THE DETAILED SURVEY HAS BEEN PREPARED AND COORDINATED WITH THE USAMRDC. SPECIES LISTS OF VASCULAR PLANTS, BUTTERFLIES AND SKIPPERS, FISHES, REPTILES, BIRDS, AND MAMMALS HAVE BEEN PREPARED. A DEER CENSUS HAS BEEN COMPLETED AND A PLAN FOR CONDUCTING THE BIRD INVENTORY HAS BEEN PREPARED. A LIMITED SMALL ANIMAL SURVEY WAS COMPLETED TO ASSIST IN DEVELOPING THE AFOREMENTIONED SPECIES LISTS.

ROCKY MOUNTAIN ARSENAL PROJECT HIGHLIGHTS

ACTIVITIES SINCE LAST RECAP (CONTINUED)

- ECOLOGICAL SAMPLING
 - VEGETATION SURVEY ACTIVITIES
 - PLANT/ANIMAL SPECIES IDENTIFICATION
- STANDARDS DEVELOPMENT
 - PROBLEM DEFINITION STUDY EXTENSION
 - CORING AND ANALYSIS
 - DIMP AND DCPD TOXICOLOGY STUDIES
- LAND USE MODEL

FIGURE RM3

FIGURE RM3 - ROCKY MOUNTAIN ARSENAL PROJECT HIGHLIGHTS

STANDARDS DEVELOPMENT

THE STANDARDS DEVELOPMENT PROGRAM INVOLVES TOXICOLOGY AND CHEMISTRY STUDIES BY THE USAMRDC ON IDENTIFIED CONTAMINANTS TO PROVIDE THE SCIENTIFIC DATA FROM WHICH ENVIRONMENTAL STANDARDS CAN BE RECOMMENDED TO THE APPROPRIATE REGULATORY AGENCIES FOR APPROVAL. THESE DATA WILL INFLUENCE THE SELECTION OF ANALYTICAL METHODS, LAND USE, AND DECONTAMINATION PROCESSES AND WILL ESTABLISH THE PARAMETERS FOR EMISSION CONTROL STANDARDS FOR RESTORATION OPERATIONS. THIS RESEARCH PROGRAM HAS BEEN DIVIDED INTO THREE PARTS: THE PROBLEM DEFINITION STUDY, CORING AND ANALYSIS, AND CHEMISTRY AND TOXICOLOGY STUDIES.

THE PROBLEM DEFINITION STUDY INVOLVES THE COLLECTION OF ALL CHEMICAL AND TOXICITY DATA ON EACH CONTAMINANT TO IDENTIFY KNOWLEDGE GAPS REQUIRING ADDITIONAL WORK. THE FIRST PORTION OF THIS STUDY (THE EVALUATION OF 16 TOP PRIORITY COMPOUNDS) HAS BEEN COMPLETED. THIS STUDY INDICATED THE AREAS WHERE ADDITIONAL RESEARCH IS REQUIRED TO FILL THE KNOWLEDGE GAPS CONCERNING THE MIGRATION POTENTIAL, BIOCHEMICAL TRANSFORMATION, TOXICOLOGY DATA AND TO A LESSEER DEGREE THE CHEMICAL CHARACTERISTICS OF THE COMPOUNDS. FOLLOW-ON WORK IN THIS AREA WILL CONTINUE IN THE CHEMISTRY AND TOXICOLOGY STUDIES PORTION OF THE RESEARCH PROGRAM. ALSO THE PROBLEM DEFINITION STUDY OF SOME 34 ADDITIONAL COMPOUNDS HAS BEEN INITIATED UNDER AN EXTENSION OF THIS TASK.

ROCKY MOUNTAIN ARSENAL PROJECT HIGHLIGHTS

ACTIVITIES SINCE LAST RECAP (CONTINUED)

- ECOLOGICAL SAMPLING
 - VEGETATION SURVEY ACTIVITIES
 - PLANT/ANIMAL SPECIES IDENTIFICATION
- STANDARDS DEVELOPMENT
 - PROBLEM DEFINITION STUDY EXTENSION
 - CORING AND ANALYSIS
 - DIMP AND DCPD TOXICOLOGY STUDIES
- LAND USE MODEL

FIGURE RM3

FIGURE RM3 - ROCKY MOUNTAIN ARSENAL PROJECT HIGHLIGHTS

STANDARDS DEVELOPMENT (CONTINUED)

THE CORING AND ANALYSIS PLAN INVOLVES THE TAKING OF SOME 500 SOIL AND 50 VEGETATION SAMPLES AT ROCKY MOUNTAIN ARSENAL. THESE SAMPLES WILL BE ANALYZED TO QUALITATIVELY VERIFY AND IDENTIFY THE TYPES OF CONTAMINANTS. ANY NEW CONTAMINANTS FOUND WILL BE ADDED TO THE LIST FOR PROBLEM DEFINITION STUDY ONCE THEY HAVE BEEN IDENTIFIED AS PRODUCTS OF RMA OPERATIONS. A DISTINCTION IS MADE THAT THIS PROGRAM BY THE US ARMY MEDICAL RESEARCH AND DEVELOPMENT COMMAND IS QUALITATIVE IN NATURE AND THE FOLLOW-ON ROCKY MOUNTAIN ARSENAL COMPREHENSIVE SURVEY IS QUANTITATIVE. THE CORING AND ANALYSIS PROGRAM IS CONTINUING ON SCHEDULE AND IS APPROXIMATELY 90% COMPLETE. HEAVY CONTAMINATION CONCENTRATIONS HAVE BEEN FOUND ONLY IN THE BASIN "A" AREA. THIS CONTAMINATION CONSISTS OF PESTICIDES AND HEAVY METALS. NO SIGNIFICANT SOIL CONTAMINATION HAS BEEN FOUND IN OTHER AREAS TO THE NORTH AND WEST OF BASIN "A" WHERE CONTAMINATION WAS PREVIOUSLY SUSPECTED.

CHEMISTRY AND TOXICOLOGY STUDIES INVOLVE CONDUCT OF MAMMALIAN, AQUATIC, WILDLIFE, AND VEGETATIVE TOXICOLOGY STUDIES AS WELL AS DEVELOPMENT OF ANALYTICAL METHODS TO INSURE CONTROL OF DOSAGES GIVEN IN THOSE STUDIES. THE USAMRDC HAS PLACED THE MAJORITY OF THIS EFFORT ON CONTRACT. BECAUSE OF THE LACK OF FY76 RDTE FUNDS, THESE EFFORTS ARE CURRENTLY LIMITED TO SUPPORT OF THE OFF-POST CONTAMINATION CONTROL PROGRAM. DIMP AND DCPD MAMMALIAN ACUTE AND SUBACUTE TOXICITY STUDIES

ROCKY MOUNTAIN ARSENAL PROJECT HIGHLIGHTS

ACTIVITIES SINCE LAST RECAP (CONTINUED)

- ECOLOGICAL SAMPLING
 - VEGETATION SURVEY ACTIVITIES
 - PLANT/ANIMAL SPECIES IDENTIFICATION
- STANDARDS DEVELOPMENT
 - PROBLEM DEFINITION STUDY EXTENSION
 - CORING AND ANALYSIS
 - DIMP AND DCPD TOXICOLOGY STUDIES
- LAND USE MODEL

FIGURE RM3

FIGURE RM3 - ROCKY MOUNTAIN ARSENAL PROJECT HIGHLIGHTS

STANDARDS DEVELOPMENT (CONTINUED)

ARE NEARING COMPLETION. VEGETATIVE TOXICOLOGY STUDIES ARE PROCEEDING TO DEFINITIVE COMPOUND TESTING. WILDLIFE STUDIES WILL BE INITIATED DURING THE NEXT QUARTER. THE ACUTE AQUATIC STUDIES WILL BE COMPLETED BY EARLY APRIL 1976. PRELIMINARY RESULTS INDICATE THAT BOTH DIMP AND DCPD ARE NOT TOXIC AT CONCENTRATIONS BEING ENCOUNTERED IN GROUNDWATER ANALYSES. COMPLETION OF TOXICITY STUDIES FOR DIMP AND DCPD IS SCHEDULED FOR MARCH 1978.

LAND USE MODEL

AS PREVIOUSLY INDICATED, RESTORATION OF A PARTICULAR INSTALLATION, OR PORTIONS THEREOF, TO A CONDITION SUITABLE FOR UNRESTRICTED FUTURE USE, EITHER GOVERNMENTAL OR PUBLIC, MAY BE IMPRACTICAL. THEREFORE, A WIDE RANGE OF REASONABLE ALTERNATIVE USES OF THE PROPERTY MUST BE EXPLORED, CONSIDERING SUCH FACTORS AS HEALTH AND ENVIRONMENTAL STANDARDS, ECONOMICS, TECHNICAL LIMITATIONS OF DECONTAMINATION, AND ECOLOGICAL AND MILITARY IMPACTS. A COMPUTERIZED MODEL WHICH WILL CONSIDER THESE AND OTHER CRITERIA IS UNDER DEVELOPMENT BY THE US ARMY MOBILITY EQUIPMENT RESEARCH AND DEVELOPMENT CENTER (MERDC) AT FORT BELVOIR, VIRGINIA. SINCE THE LAST RECAP, MERDC HAS EXPANDED THE MODEL TO PROVIDE DATA WHICH WILL BE PERTINENT TO THE OFF-POST CONTAMINATION MIGRATION PROBLEMS SUCH AS PROVIDING PARAMETERS THAT WILL INSURE CONTINUED MIGRATION CONTROL AND INDICATE POSSIBLE GOVERNMENT USES OF

ROCKY MOUNTAIN ARSENAL

PROJECT HIGHLIGHTS

ACTIVITIES SINCE LAST RECAP (CONTINUED)

- ECOLOGICAL SAMPLING
 - VEGETATION SURVEY ACTIVITIES
 - PLANT/ANIMAL SPECIES IDENTIFICATION
- STANDARDS DEVELOPMENT
 - PROBLEM DEFINITION STUDY EXTENSION
 - CORING AND ANALYSIS
 - DIMP AND DCPD TOXICOLOGY STUDIES
- LAND USE MODEL

FIGURE RM3

FIGURE RM3 - ROCKY MOUNTAIN ARSENAL PROJECT HIGHLIGHTS

LAND USE MODEL (CONTINUED)

AFFECTED PROPERTY. THE ROCKY MOUNTAIN ARSENAL PROGRAM WILL FURNISH TYPICAL PARAMETERS FOR DEVELOPMENT OF THE GENERAL MODEL WHICH WILL BE COMPLETED BY 30 SEPTEMBER 1976. UPDATING AND SIMULATION STUDIES OF THE MODEL WILL CONTINUE INTO FY81.

ROCKY MOUNTAIN ARSENAL

PROJECT HIGHLIGHTS

ACTIVITIES SINCE LAST RECAP (CONTINUED)

- DECONTAMINATION TECHNOLOGY
 - BOG PUMPING
 - LITERATURE SEARCH
 - LABORATORY STUDIES
 - TECHNOLOGY COMMITTEE
- DATA HANDLING PROGRAM
 - DATA STORAGE
 - SYSTEMS ANALYSIS
 - SOFTWARE PACKAGE DESIGN

FIGURE RM3

FIGURE RM3 - ROCKY MOUNTAIN ARSENAL PROJECT HIGHLIGHTS

DECONTAMINATION TECHNOLOGY

IN COMPLIANCE WITH THE STATE OF COLORADO'S "CEASE AND DESIST" ORDER, ROCKY MOUNTAIN ARSENAL HAS CONTINUED TO PUMP THE NORTH BOG. THIS MEASURE PRECLUDES THE DISCHARGE OF CONTAMINATED SURFACE WATER ACROSS THE NORTHERN BOUNDARY.

AN INDEPENDENT ASSESSMENT INVOLVING THE REVIEW OF THE CURRENT STATE-OF-THE-ART DECONTAMINATION AND BIO-RESTORATION TECHNOLOGY FOR LARGE LAND AREAS WAS COMPLETED BY A. D. LITTLE, INC. IN SUMMARY, THE STUDY SHOWED THAT:

1. TREATMENT PROCESSES FOR CONTAMINATED SOIL ARE PRACTICALLY NON-EXISTENT; THUS, THE ARMY IS PRESENTLY A PIONEER IN THIS EFFORT.
2. TREATMENT OF EXCAVATED SOIL BY WET CHEMICAL PROCESSES OR INCINERATION IS VERY COSTLY.
3. IN-PLACE DECONTAMINATION METHODS WILL BE REQUIRED.

IN-PLACE METHODS WHICH SHOW PROMISE ARE: (1) THE ADDITION OF ORGANIC MATERIALS AND/OR NUTRIENTS; (2) ESTABLISHING CORRECT OXYGEN CONCENTRATIONS (E.G., THROUGH DISCING OR FLOODING); (3) CHANGING THE PH AND; (4) PLANTING SELECTED CROPS OR GRASSES. THESE METHODS ARE EXPECTED TO IMPROVE THE PHYSICAL NATURE OF THE SOIL, STIMULATE MICROBIAL DECOMPOSITION OF TOXICS AND PROMOTE METABOLIC PROCESSES WITHIN THE PLANTS RESULTING IN UPTAKE OF TOXICS.

ROCKY MOUNTAIN ARSENAL

PROJECT HIGHLIGHTS

ACTIVITIES SINCE LAST RECAP (CONTINUED)

- DECONTAMINATION TECHNOLOGY
 - BOG PUMPING
 - LITERATURE SEARCH
 - LABORATORY STUDIES
 - TECHNOLOGY COMMITTEE
- DATA HANDLING PROGRAM
 - DATA STORAGE
 - SYSTEMS ANALYSIS
 - SOFTWARE PACKAGE DESIGN

FIGURE RM3

FIGURE RM3 - ROCKY MOUNTAIN ARSENAL PROJECT HIGHLIGHTS

DECONTAMINATION TECHNOLOGY (CONTINUED)

LABORATORY STUDIES WERE INITIATED ON WATER TREATMENT METHODS TO IDENTIFY PROCESSES REQUIRED TO ELIMINATE OR REDUCE THE CONCENTRATIONS OF DIMP AND DCPD IN THE GROUNDWATER AT RMA. INITIAL STUDIES HAVE BEEN COMPLETED ON FOUR WATER DECONTAMINATION METHODS, TWO OF WHICH ARE NOW BEING TESTED IN A FIELD SET-UP AT RMA. THESE ARE THE REVERSE OSMOSIS AND THE CARBON COAGULATION PROCESSES, BOTH OF WHICH REDUCE DIMP AND DCPD FROM HEAVY CONCENTRATIONS TO TRACE CONCENTRATIONS IN LABORATORY STUDIES. ALSO, A DECONTAMINATION SYSTEMS TECHNOLOGY WORKING GROUP COMPOSED OF CHEMICAL ENGINEERS FROM EDGEWOOD ARSENAL, ROCKY MOUNTAIN ARSENAL, AND THE PROJECT MANAGER'S OFFICE HAS BEEN ESTABLISHED TO GUIDE ALL TECHNOLOGY DEVELOPMENT EFFORTS. THIS GROUP HAS CONCENTRATED ON LABORATORY AND FIELD STUDIES ON WATER TREATMENT PROCESSES RELATED TO MIGRATION CONTROL AT ROCKY MOUNTAIN ARSENAL.

DATA HANDLING PROGRAM

BECAUSE THE DATA GENERATED FROM THE INSTALLATION RESTORATION PROGRAM WILL BE VOLUMINOUS IN NATURE AND MUST BE ANALYZED IMMEDIATELY AND CONTINUOUSLY TO EFFECTIVELY MANAGE A PROGRAM OF SUCH COMPLEXITY, AN AUTOMATIC DATA PROCESSING SYSTEM WILL BE REQUIRED. THE DATA BASE WILL BE CREATED BY ACCEPTING INPUT FROM SAMPLING AND ANALYSIS, ECOLOGICAL SURVEYS, ENVIRONMENTAL STANDARDS, AND TECHNOLOGY

ROCKY MOUNTAIN ARSENAL

PROJECT HIGHLIGHTS

ACTIVITIES SINCE LAST RECAP (CONTINUED)

- DECONTAMINATION TECHNOLOGY
 - BOG PUMPING
 - LITERATURE SEARCH
 - LABORATORY STUDIES
 - TECHNOLOGY COMMITTEE
- DATA HANDLING PROGRAM
 - DATA STORAGE
 - SYSTEMS ANALYSIS
 - SOFTWARE PACKAGE DESIGN

FIGURE RM3

FIGURE RM3 - ROCKY MOUNTAIN ARSENAL PROJECT HIGHLIGHTS

DATA HANDLING PROGRAM (CONTINUED)

RESEARCH AND DEVELOPMENT. THE DATA BASE WILL BE CONTINUOUSLY UPDATED AS NEW DATA ARE COLLECTED. VARIOUS COMPUTER MODELS WILL THEN BE PROGRAMMED TO UTILIZE THE DATA BASE FOR MANAGEMENT DECISIONS.

PROGRESS SINCE THE LAST RECAP INCLUDES ESTABLISHMENT OF DATA STORAGE FILES AT THE CENTRAL COMPUTER SITE. THESE FILES ARE CURRENTLY RECEIVING DATA FROM THE SAMPLING AND ANALYSIS, ECOLOGY, AND STANDARDS DEVELOPMENT TASKS. A SYSTEMS ANALYSIS TO IDENTIFY HARDWARE AND SOFTWARE REQUIREMENTS IS IN PROCESS AND SOFTWARE PACKAGES FOR DATA RETRIEVAL ARE BEING DESIGNED AND TESTED. HARDWARE REQUIREMENTS ARE SCHEDULED FOR IDENTIFICATION BY JULY 1976.

ROCKY MOUNTAIN ARSENAL

PROJECT HIGHLIGHTS

ACTIVITIES NEXT THREE MONTHS

- IDENTIFY CONTAMINANTS AND MIGRATION PATHWAYS
- COMPLETE LABORATORY RENOVATION
- CONTINUE SOIL CHEMISTRY STUDIES
- INITIATE DEVELOPMENT OF ANALYTICAL PROTOCOL
- CONTINUE ECOLOGY INVENTORY & MONITORING PROGRAM
- CONTINUE IDENTIFICATION OF REQUIRED TOXICITY WORK
- COMPLETE USAMRDC SAMPLING PROGRAM
- CONTINUE DIMP AND DCPD STUDIES
- CONTINUE DEVELOPMENT OF LAND USE MODEL
- INITIATE FIELD STUDIES
- CONTINUE USGS COMPUTER MODELING
- CONTINUE DEVELOPMENT OF DATA MANAGEMENT SYSTEM

PROBLEMS

- FUNDING

FIGURE RM3 (CONT'D)

FIGURE RM3 - ROCKY MOUNTAIN ARSENAL PROJECT HIGHLIGHTS (CONTINUED)

ACTIVITIES NEXT THREE MONTHS

WORK WILL CONTINUE IN THE SIX MAJOR TASK AREAS. IN THE SAMPLING AND ANALYSIS AREA, ANALYSES WILL BE CONTINUED TO IDENTIFY THE TYPES AND QUANTITY OF CONTAMINANTS IN THE GROUNDWATER SYSTEM BOTH ENTERING AND LEAVING THE ARSENAL. HYDROGEOLOGIC STUDIES WILL BE CONTINUED TO IDENTIFY CONTAMINANT MIGRATION PATHWAYS. RENOVATION OF THE LABORATORY WILL BE COMPLETED AND LABORATORY EQUIPMENT WILL BE INSTALLED TO SUPPORT A COMPREHENSIVE SURVEY TO BEGIN IN FY77. SOIL CHEMISTRY WILL BE STUDIED AND CORRELATED WITH VEGETATION GROWTH CHARACTERISTICS. ROCKY MOUNTAIN ARSENAL AND EDGEWOOD ARSENAL CHEMISTS WILL INITIATE PREPARATION OF ANALYTICAL PROTOCOLS FOR THE COMPREHENSIVE SURVEY. THIS EFFORT WILL BE TECHNICALLY REVIEWED BY THE ANALYTICAL SYSTEMS COMMITTEE.

IN THE ECOLOGY SAMPLING AREA, THE ONGOING ECOLOGY INVENTORY AND MONITORING PROGRAM WILL BE CONTINUED IN ORDER TO DEVELOP AN ECOLOGICAL BASELINE AGAINST WHICH THE EFFECT OF CONTAMINATION CONTROL EFFORTS CAN BE MEASURED. PROTOCOLS WILL BE DEVELOPED FOR CONDUCTING INVENTORIES OF VARIOUS LIFE GROUPS.

IN THE STANDARDS DEVELOPMENT AREA, USAMRDC WILL CONTINUE TO COLLECT TOXICOLOGICAL DATA FOR KNOWN AND SUSPECTED MIGRATING CONTAMINANTS. CONTAMINANTS REQUIRING FURTHER, MORE DETAILED, TOXICOLOGICAL INVESTIGATION WILL BE IDENTIFIED. THE ONGOING USAMRDC SAMPLING PROGRAM WILL BE

ROCKY MOUNTAIN ARSENAL

PROJECT HIGHLIGHTS

ACTIVITIES NEXT THREE MONTHS

- IDENTIFY CONTAMINANTS AND MIGRATION PATHWAYS
- COMPLETE LABORATORY RENOVATION
- CONTINUE SOIL CHEMISTRY STUDIES
- INITIATE DEVELOPMENT OF ANALYTICAL PROTOCOL
- CONTINUE ECOLOGY INVENTORY & MONITORING PROGRAM
- CONTINUE IDENTIFICATION OF REQUIRED TOXICITY WORK
- COMPLETE USAMRDC SAMPLING PROGRAM
- CONTINUE DIMP AND DCPD STUDIES
- CONTINUE DEVELOPMENT OF LAND USE MODEL
- INITIATE FIELD STUDIES
- CONTINUE USGS COMPUTER MODELING
- CONTINUE DEVELOPMENT OF DATA MANAGEMENT SYSTEM

PROBLEMS

- FUNDING

FIGURE RM3 (CONT'D)

FIGURE RM3 - ROCKY MOUNTAIN ARSENAL PROJECT HIGHLIGHTS (CONTINUED)

COMPLETED AND, EXCEPT FOR THE IDENTIFICATION OF A FEW CHEMICAL UNKNOWNNS, ALL CHEMICAL ANALYSES WILL BE COMPLETED. (IDENTIFICATION OF THE CHEMICAL UNKNOWNNS WILL BE COMPLETED IN FY7T.)

CHEMICAL AND TOXICOLOGICAL INVESTIGATION OF DIMP AND DCPD WILL CONTINUE.

IN THE LAND USE MODELING AREA, WORK WILL CONTINUE IN THE DEVELOPMENT OF THE MODEL EMPHASIZING OPTIONS CONSISTENT WITH OFF-POST CONTAMINATION MIGRATION CONTROL.

IN THE DECONTAMINATION TECHNOLOGY AREA, BOG WATER WILL BE PROCESSED AT RMA USING REVERSE OSMOSIS AND CARBON COAGULATION LABORATORY UNITS. THE COMPUTER MODEL STUDY BY THE USGS WILL CONTINUE TO IDENTIFY THE MOST FEASIBLE LOCATION FOR A CONTAMINANT CONTAINMENT/TREATMENT SYSTEM. THE EXPERTISE OF THE CORPS OF ENGINEERS' WATERWAYS EXPERIMENT STATION WILL BE SOLICITED TO AID IN DEVELOPING A COMPREHENSIVE DECONTAMINATION TECHNOLOGY PROGRAM FOR THE OUTYEARS.

IN THE DATA HANDLING AREA, DEVELOPMENT OF SOFTWARE PACKAGES FOR RETRIEVAL OF DATA WILL CONTINUE AND ALL HARDWARE REQUIREMENTS WILL BE IDENTIFIED.

ROCKY MOUNTAIN ARSENAL

PROJECT HIGHLIGHTS

ACTIVITIES NEXT THREE MONTHS

- IDENTIFY CONTAMINANTS AND MIGRATION PATHWAYS
- COMPLETE LABORATORY RENOVATION
- CONTINUE SOIL CHEMISTRY STUDIES
- INITIATE DEVELOPMENT OF ANALYTICAL PROTOCOL
- CONTINUE ECOLOGY INVENTORY & MONITORING PROGRAM
- CONTINUE IDENTIFICATION OF REQUIRED TOXICITY WORK
- COMPLETE USAMRDC SAMPLING PROGRAM
- CONTINUE DIMP AND DCPD STUDIES
- CONTINUE DEVELOPMENT OF LAND USE MODEL
- INITIATE FIELD STUDIES
- CONTINUE USGS COMPUTER MODELING
- CONTINUE DEVELOPMENT OF DATA MANAGEMENT SYSTEM

PROBLEMS

- FUNDING

FIGURE RM3 (CONT'D)

FIGURE RM3 - ROCKY MOUNTAIN ARSENAL PROJECT HIGHLIGHTS

PROBLEMS

FUNDING FOR THE ROCKY MOUNTAIN ARSENAL PROJECT IS CURRENTLY LIMITED TO SUPPORT OF THE OFF-POST CONTAMINATION CONTROL EFFORT AND RELATED TECHNOLOGY DEVELOPMENT; PREVIOUSLY PLANNED WORK RELATED SOLELY TO DEVELOPMENT OF A RESTORATION TECHNOLOGY BASE IS BEING DEFERRED.

CURRENT FUNDING LEVELS ARE ADEQUATE TO SUPPORT ONLY THE ACTIVITY DIRECTED TOWARD CONTAINING DIMP AND DCPD. INCREASED FUNDING WILL BE REQUIRED BEGINNING IN FY77 TO SUPPORT WORK ON ADDITIONAL MIGRATING CONTAMINANTS. AS PREVIOUSLY INDICATED, THREE ADDITIONAL CONTAMINANTS WERE IDENTIFIED IN THIS RECAP PERIOD ALONE, AND OTHER POTENTIAL CONTAMINANTS ARE UNDER INVESTIGATION.

(PHASE I)



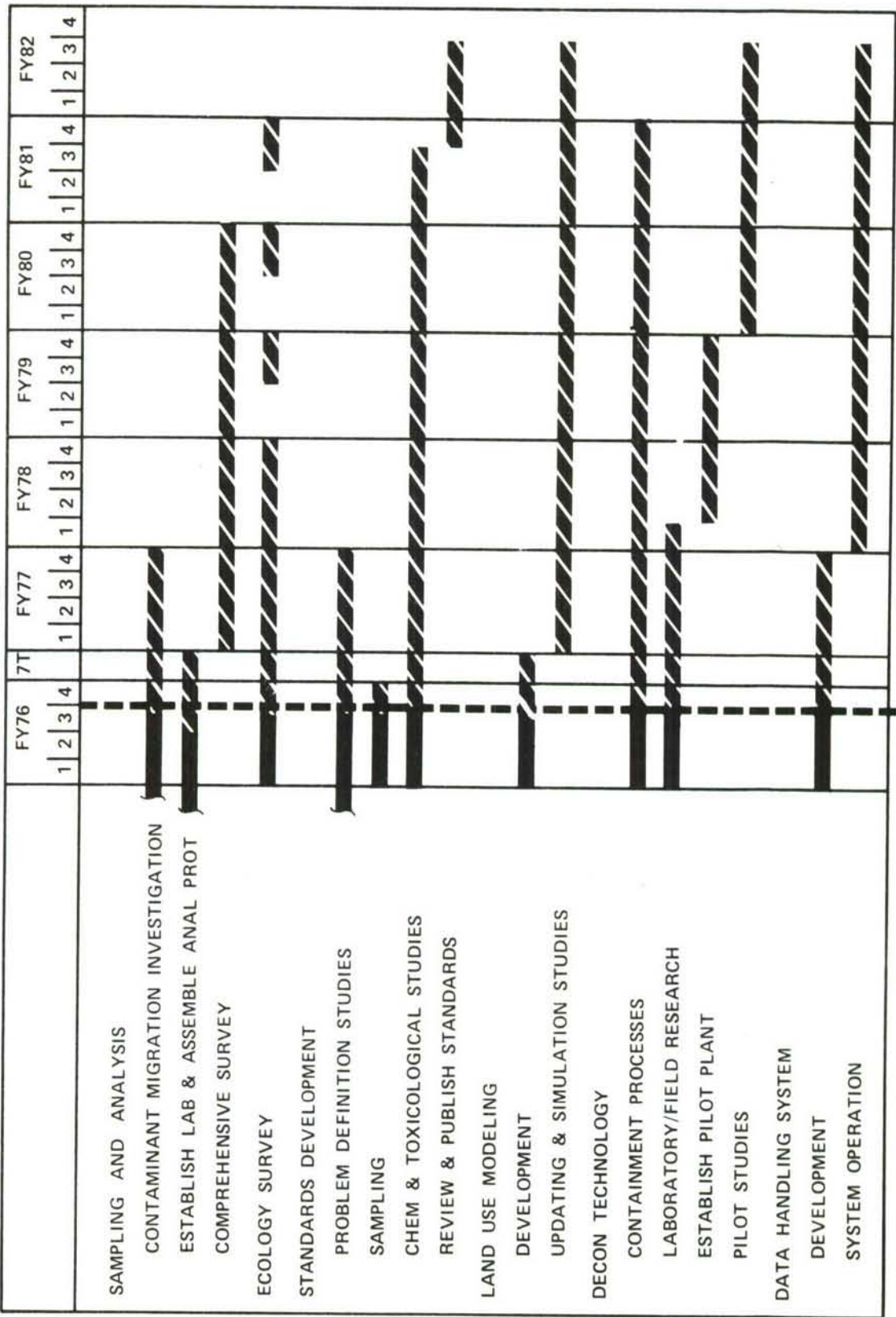
FIGURE RM4

FIGURE RM4 - ROCKY MOUNTAIN ARSENAL PROJECT SCHEDULE

THIS CHART SHOWS THE SCHEDULES FOR THE SIX MAJOR TASK AREAS IN THE PHASE I ROCKY MOUNTAIN ARSENAL PROJECT. WHILE EMPHASIZING THE CONTROL OF OFF-POST CONTAMINATION MIGRATION, THIS PROJECT SCHEDULE RETAINS FLEXIBILITY SHOULD A DECISION BE MADE TO EXCESS ROCKY MOUNTAIN ARSENAL. IT ALSO PERMITS TAKING FULL ADVANTAGE OF THE INSTALLATION RESTORATION PROJECT AT ROCKY MOUNTAIN ARSENAL TO DEVELOP TECHNOLOGY REQUIRED FOR FUTURE PROJECTS. SINCE LAST RECAP, THE LINE ITEM "OFF-POST CONTAMINATION CONTROL" WAS REMOVED AS A SEPARATE ENTITY AND INTEGRATED AS THE TOP PRIORITY SUBJECT IN EACH TASK. THIS CHANGE HAS NECESSITATED THE ADDITION OF TWO NEW SUBELEMENTS: "CONTAMINANT MIGRATION INVESTIGATION" UNDER SAMPLING AND ANALYSIS AND "CONTAINMENT PROCESSES" UNDER DECONTAMINATION TECHNOLOGY. "CONTAMINANT MIGRATION INVESTIGATION" INCLUDES STUDIES TO DEFINE GEOLOGICAL PATHWAYS BY WHICH CONTAMINANTS CAN MIGRATE IN GROUNDWATER, STUDIES TO IDENTIFY THE VISIBLE EFFECTS OF MIGRATING CONTAMINANTS ON THE ENVIRONMENT, AND DEVELOPMENT OF MODELS TO PREDICT FUTURE CONTAMINATION MIGRATION. "CONTAINMENT PROCESSES" ARE RELATED TO THE EVALUATION OF METHODS TO CONTAIN MIGRATING CONTAMINANTS WITHIN THE INSTALLATION BOUNDARIES AND AT THE SOURCE.

WHILE ESTABLISHMENT OF THE ANALYTICAL LABORATORY IS PROCEEDING ON SCHEDULE, THE DEVELOPMENT OF THE ANALYTICAL PROTOCOLS FOR THE COMPREHENSIVE SURVEY IS SOME TWO MONTHS BEHIND SCHEDULE BECAUSE THE FUNDS TO SUPPORT THIS EFFORT ARE BEING USED TO SUPPORT HIGHER PRIORITY TASKS TO IDENTIFY CHEMICAL

ROCKY MOUNTAIN ARSENAL PROJECT SCHEDULE (PHASE I)



PLANNED
 ACTUAL STATUS

TODAY

FIGURE RM4

FIGURE RM4 - ROCKY MOUNTAIN ARSENAL PROJECT SCHEDULE

UNKNOWN'S MIGRATING IN THE GROUNDWATER. THE IMPACT WILL BE TO INITIALLY CONDUCT THE COMPREHENSIVE SURVEY AT A SLOWER PACE THAN WAS ORIGINALLY PLANNED. HOWEVER, WITH ADEQUATE FUNDING IN THE OUTYEARS, THE EFFECT OF THIS SLIPPAGE SHOULD BE MINIMAL. THE LAND USE MODEL IS A MONTH BEHIND ITS ORIGINAL SCHEDULE AS A RESULT OF EXPANDING THE SCOPE OF THE TASK TO INCLUDE PARAMETERS RELATED TO OFF-POST CONTAMINATION CONTROL AND OTHER POSSIBLE GOVERNMENT LAND USES. HOWEVER, THIS WILL NOT IMPACT ON THE TARGET DATE FOR COMPLETION OF THE MODEL.

ROCKY MOUNTAIN ARSENAL PROJECT
ESTIMATED PROGRAM BUDGET
FY75 - FY82

(CONSTANT DOLLARS IN MILLIONS)

APPROPRIATION	LAST RECAP	THIS RECAP	DIFFERENCE
OMA	(22.411)	(25.626)	(+3.215)
SURVEY	22.411	25.626	+3.215
RDTE	(44.762)	(50.372)	(+5.610)
TECHNOLOGY ACQUISITION	44.762	50.372	+5.610
MCA	(2.186)	(2.186)	(0)
ANALYTICAL LAB RENOVATION	.146	.146	0
PILOT PLANT CONST	2.040	2.040	0
GRAND TOTAL	69.359	78.184	+8.825

FIGURE RM5

FIGURE RM5 - ROCKY MOUNTAIN ARSENAL PROJECT ESTIMATED PROGRAM BUDGET

THE CURRENT PROGRAM BUDGET ESTIMATE OF \$78.184 MILLION SHOWN ON THIS CHART REPRESENTS THE ESTIMATE TO COMPLETION OF THE PHASE I SURVEY AND TECHNOLOGY ACQUISITION EFFORT FOR THE ROCKY MOUNTAIN ARSENAL PROJECT. WHILE CURRENTLY IDENTIFIED TO THE ACTIVITIES AT ROCKY MOUNTAIN ARSENAL, THE TECHNOLOGY BASE DEVELOPED THERE WILL HAVE APPLICATION AT OTHER SITES.

UPWARD REVISION IN THE PROGRAM BUDGET ESTIMATE RESULTS PRIMARILY FROM DEFINITIZATION OF OUTYEAR PROGRAM REQUIREMENTS AS MODIFIED BY CURRENT FISCAL YEAR FUNDING CONSTRAINTS.

IT SHOULD BE NOTED THAT THESE LEVELS DO NOT REFLECT THE BUDGETARY REQUIREMENTS FOR PHASES II AND III (FACILITY CONSTRUCTION, OPERATIONS) OF THE PROGRAM WHICH ARE DEPENDENT ON THE RESULTS OF THE SURVEY AND TECHNOLOGY ACQUISITION PHASE (PHASE I).

ROCKY MOUNTAIN ARSENAL PROJECT RDTE PROGRAM BUDGET

(CONSTANT \$ IN MILLIONS)

	PRIOR YEAR FY75	CURRENT YEAR FY76	FY7T	BUDGET YEAR FY77	OUT YEARS FY78-82	TO COMPLETE
APPROVED PROGRAM	39.153	1.900	0	2.850	33.106	AEBD
ESTIMATED						
ADDITIONS (+)	11.219		.188	2.470	8.561	
DELETIONS (-)						
TOTAL PM ESTIMATE	50.372	1.900	.188	5.320	41.667	AEBD
ACTUAL OBLIGATIONS	3.197					

FIGURE RM6

FIGURE RM6 - ROCKY MOUNTAIN ARSENAL PROJECT RDTE PROGRAM BUDGET

THIS CHART REFLECTS THE RDTE REQUIREMENTS FOR PHASE I OF THE RMA PROJECT TO COMPLETION. THE RDTE EFFORT IS DIRECTED TO THREE TECHNICAL AREAS: ANALYTICAL SYSTEMS TECHNOLOGY, STANDARDS DEVELOPMENT, AND DECONTAMINATION TECHNOLOGY. FUNDING IN FY75 AND FY76 IS PRIMARILY IN SUPPORT OF STANDARDS DEVELOPMENT. RECENT IDENTIFICATION OF ADDITIONAL MIGRATING CONTAMINANTS HAS RESULTED IN THE ESTABLISHMENT OF UNFUNDED REQUIREMENTS FOR FY77, PRINCIPALLY IN SUPPORT OF THE USAMRDC PROBLEM DEFINITION STUDIES. FY77 AND FY78 FUNDING LEVELS REFLECT THE OSD BUDGET REDUCTIONS TO APPROXIMATELY \$3 MILLION EACH YEAR. THIS PROVIDES ONLY FOR CONTINUING EFFORTS ON THE MIGRATING CONTAMINANTS DIMP AND DCPD. FY77, FY78, AND FY79 UNFINANCED REQUIREMENTS HAVE BEEN DEVELOPED TO ASSURE THAT ADDITIONAL MIGRATING CONTAMINANTS IDENTIFIED IN THE SAMPLING AND ANALYSIS PROGRAM CAN BE INTEGRATED INTO THE PROGRAM IN A RESPONSIVE MANNER.

ROCKY MOUNTAIN ARSENAL PROJECT OMA PROGRAM BUDGET

(CONSTANT \$ IN MILLIONS)

	PRIOR YEAR FY75	CURRENT YEAR FY76	FY7T	BUDGET YEAR FY77	OUT YEARS FY78-82	TO COMPLETE
APPROVED PROGRAM ESTIMATED	25.626	.672	.531	3.778	20.517	AEBD
ADDITIONS (+) DELETIONS (-)						
TOTAL PM ESTIMATE	25.626	.672	.531	3.778	20.517	AEBD
ACTUAL OBLIGATIONS	.800					

FIGURE RM7

FIGURE RM7 - ROCKY MOUNTAIN ARSENAL PROJECT OMA PROGRAM BUDGET

SHOWN HERE ARE THE OMA PROGRAM BUDGET REQUIREMENTS FOR PHASE I OF THE RMA PROJECT TO COMPLETION. APPROVED FUNDING FOR FY75 AND FY76/77 PRIMARILY SUPPORTS THE CONTROL OF MIGRATING CONTAMINANTS. FY77 BUDGET REQUIREMENTS PROVIDE FOR CONTINUATION OF THE WATER MONITORING PROGRAM AND THE FULL INITIATION OF OTHER ELEMENTS OF THE PROGRAM INCLUDING A SOIL SURVEY, ECOLOGICAL SAMPLING, DATA MANAGEMENT, AND LAND-USE MODELING. OUT-YEAR REQUIREMENTS SUPPORTING THE COMPLETION OF THESE EFFORTS MAY CHANGE BASED ON INFORMATION RESULTING FROM THE COMPREHENSIVE SURVEY.

DEFINITIZATION AND INITIATION OF PHASES II AND III AT RMA WILL RESULT IN ADDITIONAL OMA REQUIREMENTS IN THE OUTYEARS.

ROCKY MOUNTAIN ARSENAL PROJECT

MCA PROGRAM BUDGET

(CONSTANT \$ IN MILLIONS)

	PRIOR YEAR FY75	CURRENT YEAR FY76	FY77	BUDGET YEAR FY77	OUT YEARS FY78-82	TO COMPLETE
APPROVED PROGRAM ESTIMATED	2.186	.146			2.040	AEBD
ADDITIONS (+) DELETIONS (-)						
TOTAL PM ESTIMATE	2.186	.146			2.040	AEBD

FIGURE RM8

FIGURE RM8 - ROCKY MOUNTAIN ARSENAL PROJECT MCA PROGRAM BUDGET

THIS CHART PORTRAYS THE APPROVED FY76 URGENT MINOR MCA REQUIREMENT FOR RENOVATION OF A LABORATORY FACILITY AND THE OUTYEAR INITIAL ESTIMATE FOR CONSTRUCTION OF PILOT FACILITIES. THE OUTYEAR ESTIMATES FOR PILOT FACILITIES MAY CHANGE BASED ON CLEARER DEFINITION OF DECONTAMINATION REQUIREMENTS. ANY ADDITIONAL PHASE II ESTIMATES FOR FURTHER CONSTRUCTION OF DECONTAMINATION FACILITIES ARE DEPENDENT ON RESULTS OF PHASE I PILOTING EFFORTS.

ROCKY MOUNTAIN ARSENAL PROJECT

PROJECT MANAGER'S EVALUATION

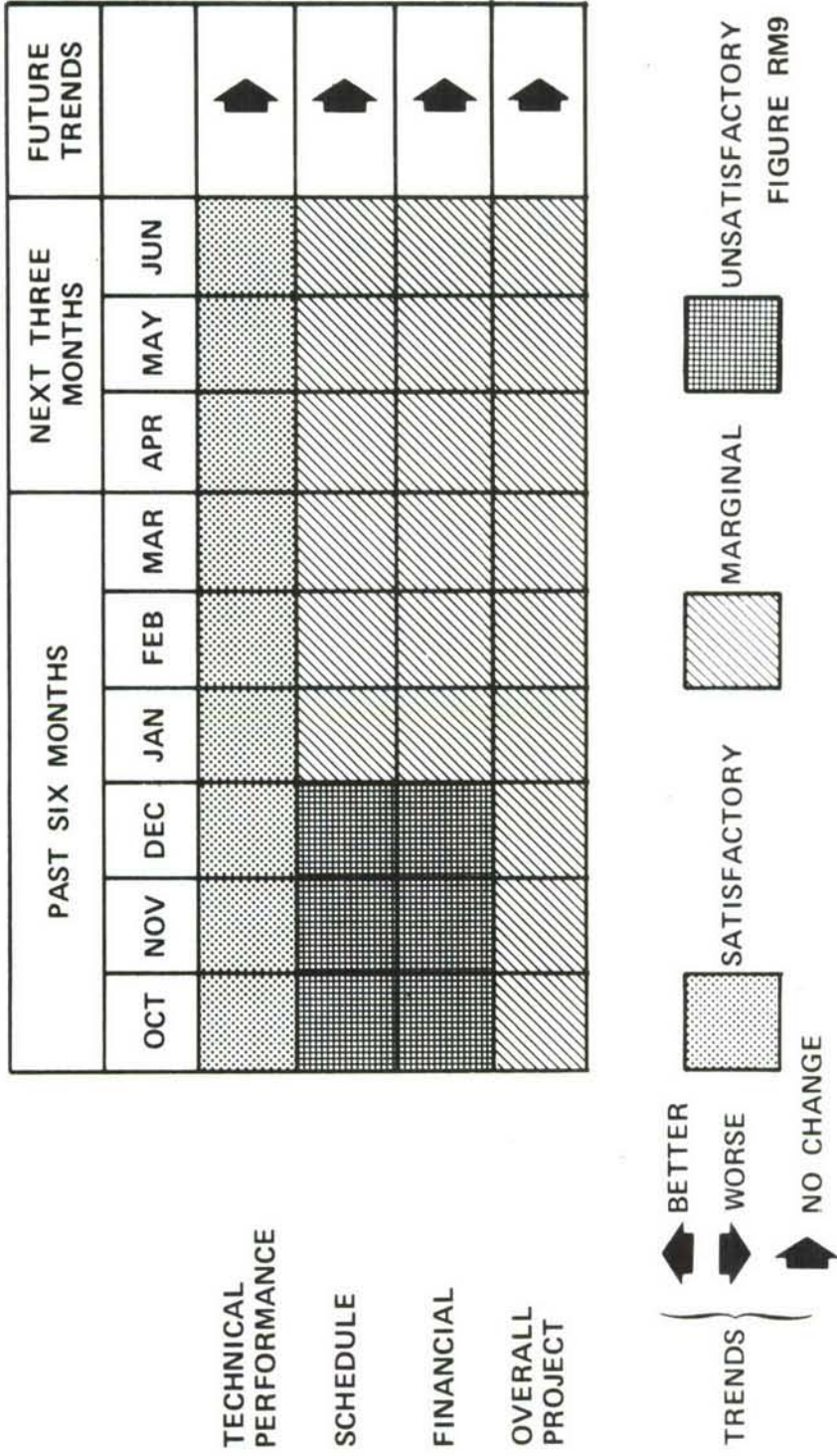


FIGURE RM9 - ROCKY MOUNTAIN ARSENAL PROJECT - PROJECT MANAGER'S EVALUATION

WHILE TECHNICAL PERFORMANCE REMAINS SATISFACTORY, OVERALL THE ROCKY MOUNTAIN ARSENAL PROJECT IS EVALUATED AS MARGINAL. THIS RATING IS PRINCIPALLY ATTRIBUTABLE TO THE RDTE FUNDING RESTRICTIONS IN FY76, 77, AND 78. THESE RESTRICTIONS WILL IMPEDE THE STANDARDS DEVELOPMENT EFFORT, AND EVENTUALLY PRECLUDE USING THE ARSENAL AS A MODEL FOR TECHNOLOGY DEVELOPMENT. ADEQUATE FUNDING IS REQUIRED BEGINNING IN FY77 TO PRECLUDE SIGNIFICANT PROGRAM SLIPPAGES.



WELDON SPRING CHEMICAL PLANT PROJECT

FIGURE WS1

FIGURE WS1 - WELDON SPRING CHEMICAL PLANT PROJECT

THE WELDON SPRING CHEMICAL PLANT (WSCP) PROJECT INVOLVES THE CONTAMINATION ASSESSMENT AND EVENTUAL DECONTAMINATION AND RESTORATION OF A 220-ACRE SITE APPROXIMATELY 25 MILES WEST OF ST. LOUIS, MISSOURI. THE PLANT IS LOCATED WITHIN THE FORMER WELDON SPRING ORDNANCE WORKS WHICH PRODUCED TNT AND DNT DURING WORLD WAR II. THE PROPERTY WAS ACQUIRED FROM THE ARMY BY THE ATOMIC ENERGY COMMISSION (NOW THE ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION (ERDA)) IN 1955 FOR PROCESSING URANIUM AND THORIUM. THESE OPERATIONS RESULTED IN THE RADIOLOGICAL CONTAMINATION OF THE EQUIPMENT, BUILDINGS, AND SURROUNDING TERRAIN. THE ARMY REACQUIRED WSCP FROM THE ATOMIC ENERGY COMMISSION IN 1967 FOR CONVERSION TO A HERBICIDE PRODUCTION FACILITY. AT THAT TIME THE ATOMIC ENERGY COMMISSION RETAINED POSSESSION OF FOUR RAFFINATE (PROCESS WASTE) PITS CONTAINING AN ESTIMATED 150 TONS OF URANIUM AND 75 TONS OF THORIUM, A HIGHLY CONTAMINATED BUILDING FORMERLY USED TO STORE URANIUM ORE CONCENTRATES, AND A CONTAMINATED QUARRY APPROXIMATELY FOUR MILES BY ROAD FROM THE PLANT AREA. THE DEMAND FOR HERBICIDE DECREASED BEFORE RENOVATION OF THE FACILITY WAS COMPLETED AND THE PROJECT WAS CANCELLED BY THE ARMY IN 1968. EFFORTS TO EXCESS THE FACILITY THROUGH THE GENERAL SERVICES ADMINISTRATION WERE UNSUCCESSFUL. THE PROPERTY REMAINS ON THE BOOKS OF THE KANSAS CITY DISTRICT CORPS OF ENGINEERS WITH EDGEWOOD ARSENAL RETAINING A LICENSE FOR POSSESSION AND STORAGE OF THE SOURCE MATERIAL IN THE FORM OF CONTAMINATION. THE DISTRICT ENGINEER RETAINS A SMALL FIELD OFFICE ONSITE. CONGRESSIONAL INTEREST IN THE SITE WAS EXPRESSED IN

FIGURE W51 - WELDON SPRING CHEMICAL PLANT PROJECT

JANUARY 1976, AND ACTIONS WERE INITIATED BY THE ARMY TO NEGOTIATE RETURN OF THE PROPERTY AND THE RESPONSIBILITY FOR DECONTAMINATION TO ERDA, SINCE THAT AGENCY (AS SUCCESSOR TO THE AEC) WAS THE SOLE CONTRIBUTOR TO THE RADIOLOGICAL CONTAMINATION AT THE SITE.

SINCE PROJECT INCEPTION, EFFORTS HAVE BEEN DIRECTED TOWARD ASSESSMENT OF CONTAMINATION LEVELS AND COORDINATION WITH THE ERDA WITH A VIEW TOWARD ERDA PROVIDING FINANCIAL AND TECHNICAL ASSISTANCE FOR EVENTUAL DECONTAMINATION AND RESTORATION OF THE PLANT.

WELDON SPRING CHEMICAL PLANT

PROJECT TASK LIST

TASK	STATUS
PRELIMINARY ASSESSMENT	COMPLETE
INTERIM ASSESSMENT	COMPLETE ★
DETAILED SURVEY/ASSESSMENT	PLANNING
DECONTAMINATION/RESTORATION	PLANNING SUSPENDED
★ CHANGES SINCE LAST RECAP	FIGURE WS2

FIGURE WS2 - WELDON SPRING CHEMICAL PLANT PROJECT TASK LIST

THE TASKS ASSOCIATED WITH THE WSCP PROJECT ARE ORIENTED TOWARD ACCOMPLISHMENT OF FOUR MAJOR EFFORTS:

- (1) PRELIMINARY ASSESSMENT BASED ON HISTORICAL DATA AND LIMITED SURVEYS.
- (2) INTERIM ASSESSMENT INCLUDING SURVEYS AND UPDATED INFORMATION.
- (3) DETAILED SURVEY AND ASSESSMENT IN PREPARATION FOR CLEANUP.
- (4) DECONTAMINATION AND RESTORATION.

THERE HAS BEEN ONE CHANGE TO THE TASK LIST SINCE LAST RECAP. THE INTERIM ASSESSMENT WAS COMPLETED IN FEBRUARY 1976, AND THE NECESSARY COORDINATION WITH VARIOUS ARMY AND ERDA OFFICES WAS COMPLETED 1 MARCH 1976. THE COMPLETED ASSESSMENT WAS FORWARDED TO HQDA ON 5 MARCH 1976. THE TASK FOR DETAILED SURVEY AND ASSESSMENT OF WSCP TO INCLUDE A REVIEW OF DECONTAMINATION/RESTORATION ALTERNATIVES WITH ASSOCIATED COSTS AND SCHEDULES, AND AN ANALYSIS OF THESE ALTERNATIVES, IS PLANNED FOR FY77. PLANNING FOR DECONTAMINATION/RESTORATION OF WSCP IS SUSPENDED PENDING RESOLUTION OF NEGOTIATIONS WITH ERDA CONCERNING JURISDICTIONAL AND FINANCIAL RESPONSIBILITIES.

WELDON SPRING CHEMICAL PLANT PROJECT HIGHLIGHTS

ACTIVITIES SINCE LAST RECAP

- INTERIM ASSESSMENT COMPLETED
- DETAILED SURVEY PLANNING

ACTIVITIES NEXT THREE MONTHS

- ARMY/ERDA NEGOTIATIONS
- DETAILED AERIAL SURVEY
- PLANNING FOR DETAILED SURVEY/ASSESSMENT OF ALTERNATIVES

PROBLEMS

- DEFINITION OF FUTURE PROJECT RESPONSIBILITIES

FIGURE WS3

FIGURE WS3 - WELDON SPRING CHEMICAL PLANT PROJECT HIGHLIGHTS

ACTIVITIES SINCE LAST RECAP

INTERIM ASSESSMENT COMPLETED

THE INTERIM ASSESSMENT OF WSCP WAS COMPLETED AND COORDINATED WITHIN THE DEPARTMENT OF THE ARMY AND THE ERDA DURING FEBRUARY 1976. THE DOCUMENT WAS SUBMITTED TO HQDA ON 5 MARCH 1976. THIS ASSESSMENT WAS INITIATED IN SEPTEMBER 1975 AND WAS BASED ON BOTH HISTORICAL INFORMATION AND DATA OBTAINED THROUGH ADDITIONAL SURVEYS. IT WAS DESIGNED TO FULFILL A COMMITMENT BY THE SECRETARY OF THE ARMY TO THE MISSOURI CONGRESSIONAL DELEGATION.

THE ACTIONS ACCOMPLISHED TO OBTAIN INFORMATION ON THE SITE INCLUDED A COMPLETE REVIEW OF AVAILABLE DOCUMENTATION AND WATER MONITORING DATA; A RADIOLOGICAL TERRAIN AND SURFACE WATER SURVEY; AN AERIAL RADIOLOGICAL SURVEY OF THE TERRAIN; SURFACE AND SUBSURFACE SOIL AND WATER ANALYSES FOR RESIDUAL EXPLOSIVES CONTAMINATION; EXCAVATION FOR UNDERGROUND EXPLOSIVES CONTAMINATION; AND A CORE DRILLING AND SOIL ANALYSES PROGRAM TO EXAMINE THE GEOLOGIC SETTING AND EVALUATE THE POTENTIAL FOR VERTICAL MIGRATION OF SURFACE WATER.

THE RESULTS OF THESE EFFORTS INDICATE THAT THE BUILDING INTERIORS ARE CONTAMINATED WITH VARYING LEVELS OF RADIOLOGICAL MATERIAL FROM NO DETECTABLE CONTAMINATION TO HIGHLY CONTAMINATED PROCESS BUILDINGS

WELDON SPRING CHEMICAL PLANT PROJECT HIGHLIGHTS

ACTIVITIES SINCE LAST RECAP

- INTERIM ASSESSMENT COMPLETED
- DETAILED SURVEY PLANNING

ACTIVITIES NEXT THREE MONTHS

- ARMY/ERDA NEGOTIATIONS
- DETAILED AERIAL SURVEY
- PLANNING FOR DETAILED SURVEY/ASSESSMENT OF ALTERNATIVES

PROBLEMS

- DEFINITION OF FUTURE PROJECT RESPONSIBILITIES

FIGURE WS3

FIGURE WS3 - WELDON SPRING CHEMICAL PLANT PROJECT HIGHLIGHTS

INTERIM ASSESSMENT COMPLETED (CONTINUED)

WITH VISUAL CONTAMINATION. TWENTY OF TWENTY-THREE BUILDING INTERIORS SURVEYED WOULD NOT MEET CURRENT NUCLEAR REGULATORY COMMISSION (NRC) GUIDELINES FOR UNRESTRICTED (NON-NUCLEAR) USE. THE EXTERIOR SURFACES OF MOST BUILDINGS ARE CONTAMINATED WELL ABOVE APPLICABLE GUIDELINES, AS ARE THE MAJORITY OF EXPANSION JOINTS IN CONCRETE SURFACES AT THE SITE. THE TERRAIN WITHIN THE BOUNDARIES HAS BEEN CONTAMINATED BY SURFACE RUNOFF, ADSORPTION OF AIRBORNE CONTAMINANTS, AND USE OF VARIOUS AREAS FOR STORAGE AND DISPOSAL OF RADIOLOGICAL MATERIALS.

THE SURFACE WATER EXITING THE SITE IN THREE LOCATIONS CONTAINS LOW AMOUNTS OF RADIOLOGICAL CONTAMINANTS WHICH ARE CURRENTLY WELL BELOW MAXIMUM PERMISSIBLE CONCENTRATIONS FOR UNCONTROLLED AREAS AS SPECIFIED IN FEDERAL REGULATIONS. INFORMATION GAINED FROM A LIMITED GEOLOGICAL/HYDROLOGICAL EVALUATION INDICATES THAT THE UNDERLYING AQUIFER IS PROTECTED FROM VERTICAL MIGRATION OF CONTAMINATED SURFACE WATER BY A 25-30 FOOT LAYER OF HIGHLY IMPERMEABLE CLAY. THE AERIAL RADIOLOGICAL SURVEY RESULTS INDICATE THAT NO SIGNIFICANT CONTAMINATION OF THE TERRAIN OUTSIDE THE PLANT BOUNDARIES HAS OCCURRED. A FOLLOW-ON AERIAL SURVEY IS CURRENTLY SCHEDULED FOR APRIL 1976 TO FILL INFORMATION GAPS BETWEEN THE OVERALL LAND RADIOLOGICAL PROFILE OF THE AREA AND THE SPECIFIC DATA OBTAINED ON THE PROCESS BUILDING AREA.

WELDON SPRING CHEMICAL PLANT PROJECT HIGHLIGHTS

ACTIVITIES SINCE LAST RECAP

- INTERIM ASSESSMENT COMPLETED
- DETAILED SURVEY PLANNING

ACTIVITIES NEXT THREE MONTHS

- ARMY/ERDA NEGOTIATIONS
- DETAILED AERIAL SURVEY
- PLANNING FOR DETAILED SURVEY/ASSESSMENT OF ALTERNATIVES

PROBLEMS

- DEFINITION OF FUTURE PROJECT RESPONSIBILITIES

FIGURE WS3

FIGURE WS3 - WELDON SPRING CHEMICAL PLANT PROJECT HIGHLIGHTS

INTERIM ASSESSMENT COMPLETED (CONTINUED)

GAS CHROMATOGRAPHIC ANALYSES OF WATER, SURFACE AND SUBSURFACE SOILS, AND EXCAVATION IN AREAS WHERE RESIDUAL EXPLOSIVES CONTAMINATION AND UNDERGROUND TRANSPORT LINES MIGHT BE EXPECTED, INDICATE THAT NO EXPLOSIVES SAFETY HAZARD REMAINS AT THE SITE. THE SUBSURFACE SOIL, HOWEVER, DOES CONTAIN TNT AND DNT IN THE FORM OF GENERAL, LOW LEVEL CONTAMINATION FROM THE SURFACE TO APPROXIMATELY FOUR FEET BELOW THE SURFACE. SURFACE WATER LEAVING THE SITE CONTAINS ONLY TRACES OF NITRATED TOLUENES BELOW THE ONE PART PER BILLION RANGE WHICH IS BELOW INTERIM LIMITS IDENTIFIED BY USAMRDC.

ALTHOUGH AIRBORNE DISTRIBUTION OF RADIOLOGICAL CONTAMINANTS DID OCCUR DURING THE AEC OPERATIONS, GOOD GROUND COVER AND LACK OF ACTIVITY CURRENTLY PRECLUDE THAT SOURCE OF POTENTIAL CONTAMINATION TO THE SURROUNDING AREAS. THE MAJOR CONTAMINANTS PRESENT AT THE SITE ARE NATURAL URANIUM, WITH LESSER AMOUNTS OF URANIUM DAUGHTER PRODUCTS, THORIUM, AND ITS DAUGHTERS. THESE DO NOT CONSTITUTE ANY SIGNIFICANT EXTERNAL RADIOLOGICAL EXPOSURE HAZARD, BUT RATHER AN INTERNAL RADIOLOGICAL POTENTIAL HAZARD THROUGH INGESTION OR INHALATION OF THE CONTAMINANTS.

DETAILED SURVEY PLANNING

A REQUEST FOR HQDA GUIDANCE ON PROCEEDING WITH THE DETAILED SURVEY IN FY77 WAS SUBMITTED ON 3 FEBRUARY 1976. REPLY IS EXPECTED PRIOR TO THE NEXT RECAP.

WELDON SPRING CHEMICAL PLANT PROJECT HIGHLIGHTS

ACTIVITIES SINCE LAST RECAP

- INTERIM ASSESSMENT COMPLETED
- DETAILED SURVEY PLANNING

ACTIVITIES NEXT THREE MONTHS

- ARMY/ERDA NEGOTIATIONS
- DETAILED AERIAL SURVEY
- PLANNING FOR DETAILED SURVEY/ASSESSMENT OF ALTERNATIVES

PROBLEMS

- DEFINITION OF FUTURE PROJECT RESPONSIBILITIES

FIGURE WS3

FIGURE WS3 - WELDON SPRING CHEMICAL PLANT PROJECT HIGHLIGHTS

ACTIVITIES NEXT THREE MONTHS

ARMY/ERDA NEGOTIATIONS

THE ERDA WAS FORMALLY APPROACHED IN SEPTEMBER 1975 BY THE SECRETARY OF THE ARMY WITH A PROPOSAL THAT THEY ASSUME RESPONSIBILITY FOR THE DECONTAMINATION AND RESTORATION OF WELDON SPRING CHEMICAL PLANT SINCE THEY WERE RESPONSIBLE FOR THE RADIOLOGICAL CONTAMINATION NOW PRESENT. THE ADMINISTRATOR OF ERDA RESPONDED WITH AN OFFER OF TECHNICAL ASSISTANCE ONLY AND DECLINED TO ACCEPT RESPONSIBILITY FOR THE PROJECT OR PROVIDE FUNDS FOR THE EFFORT. NEGOTIATIONS HAVE NOT PROGRESSED BEYOND THE STAGE THAT ERDA ACCEPTS RESPONSIBILITY FOR ONLY THE AREAS THEY CURRENTLY OCCUPY ONSITE. ACTIONS HAVE BEEN IN PROGRESS WITHIN THE ARMY SECRETARIAT TO PREPARE A POSITION FOR FURTHER DISCUSSIONS WITH THE ERDA ON THIS MATTER, AND IT IS ANTICIPATED THAT THE SUBJECT WILL AGAIN BE ADDRESSED DURING THE NEXT THREE MONTHS IN AN ATTEMPT TO RESOLVE THE QUESTION OF JURISDICTIONAL AND FINANCIAL RESPONSIBILITIES FOR FUTURE ACTIONS AT WSCP.

DETAILED AERIAL SURVEY

AN AERIAL RADIOLOGICAL SURVEY BY AN ERDA CONTRACTOR USING A FIXED-WING AIRCRAFT WAS EMPLOYED TO PROVIDE DATA FOR THE INTERIM ASSESSMENT OF WSCP. THAT SURVEY COVERED THE SITE AND ITS ENVIRONS WITH THE RESULTANT DATA INDICATING THAT THE TERRAIN OUTSIDE THE WSCP BOUNDARIES HAS NOT BECOME

WELDON SPRING CHEMICAL PLANT PROJECT HIGHLIGHTS

ACTIVITIES SINCE LAST RECAP

- INTERIM ASSESSMENT COMPLETED
- DETAILED SURVEY PLANNING

ACTIVITIES NEXT THREE MONTHS

- ARMY/ERDA NEGOTIATIONS
- DETAILED AERIAL SURVEY
- PLANNING FOR DETAILED SURVEY/ASSESSMENT OF ALTERNATIVES

PROBLEMS

- DEFINITION OF FUTURE PROJECT RESPONSIBILITIES

FIGURE WS3

FIGURE WS3 - WELDON SPRING CHEMICAL PLANT PROJECT HIGHLIGHTS

DETAILED AERIAL SURVEY (CONTINUED)

RADIOLOGICALLY CONTAMINATED. A FOLLOW-ON SURVEY OF A MUCH MORE DETAILED NATURE, EMPLOYING ROTARY-WING AIRCRAFT, IS PLANNED FOR THE APRIL 1976 TIMEFRAME, PENDING FUNDING ARRANGEMENTS WITH THE ERDA, TO PROVIDE A BETTER LAND RADIATION PROFILE FOR THE SITE AND ITS ASSOCIATED DRAINAGE SYSTEMS. THIS DATA WILL FILL THE REMAINING INFORMATION GAP BETWEEN THE OVERALL RADIOLOGICAL PROFILE OF THE AREA AND THE MORE DETAILED BUILDING AREA SURVEYS.

PLANNING FOR DETAILED SURVEY AND ASSESSMENT OF ALTERNATIVES

PLANNING CONTINUES FOR AN ACCEPTABLE, COOPERATIVE ARRANGEMENT BETWEEN THE ERDA AND THE ARMY FOR THE DETAILED SURVEY AND ASSESSMENT OF WSCP TO PROVIDE ALTERNATIVES AND COSTS ASSOCIATED WITH ACTUAL DECONTAMINATION AND RESTORATION OF THE SITE FOR USE BY INTERESTED CONGRESSIONAL DELEGATES. IMPLEMENTATION OF SUCH AN AGREEMENT IS BEING DEFERRED PENDING RECEIPT OF HQDA GUIDANCE PREVIOUSLY MENTIONED.

PROBLEMS

AS PREVIOUSLY MENTIONED, NEGOTIATIONS BETWEEN HQDA AND THE ERDA HAVE FAILED TO DEFINE FUTURE PROJECT RESPONSIBILITIES. NEGOTIATIONS ARE EXPECTED TO RESUME AT THE ARMY SECRETARIAT LEVEL TO RESOLVE THIS MATTER, BUT NO SOLUTION CAN BE FORECAST.

WELDON SPRING CHEMICAL PLANT PROJECT

ESTIMATED PROGRAM BUDGET

(CONSTANT \$ IN MILLIONS)

APPROPRIATION	LAST RECAP	THIS RECAP	DIFFERENCE
OMA	(.900)	(.900)	0
DETAILED SURVEY AND ASSESSMENT	.900	.900	0
RDTE	(.035)	(.035)	0
INTERIM ASSESSMENT	.035	.035	0
GRAND TOTAL	.935	.935	0

FIGURE WS5

FIGURE WS5 - WELDON SPRING CHEMICAL PLANT PROJECT ESTIMATED PROGRAM BUDGET

THIS CHART DEPICTS THE FUNDING REQUIREMENTS TO CONDUCT AN INTERIM ASSESSMENT AND SUBSEQUENT DETAILED SURVEY AND ASSESSMENT AT WELDON SPRING CHEMICAL PLANT. THE \$.900 MILLION WILL BE REQUIRED IF THE DEPARTMENT OF THE ARMY DIRECTS THAT A DETAILED SURVEY AND ASSESSMENT OF THE FACILITY BE CONDUCTED. THIS COST ESTIMATE FOR BUDGET PLANNING PURPOSES IS SUBJECT TO REVISION PENDING DETAILED EXAMINATION OF THIS PROGRAM ELEMENT WHICH IS CURRENTLY IN PROGRESS. COSTS OF ACTUAL CLEANUP WILL BE DEVELOPED UPON COMPLETION OF THE DETAILED SURVEY AND ASSESSMENT.

WELDON SPRING CHEMICAL PLANT PROJECT

RDTE PROGRAM BUDGET

(CONSTANT \$ IN MILLIONS)

	PRIOR YEAR FY75	CURRENT YEAR FY76	FY77	BUDGET YEAR FY77	OUT YEARS FY78-82	TO COMPLETE
APPROVED PROGRAM ESTIMATED	.035	.035				
ADDITIONS (+) DELETIONS (-)						
TOTAL PM ESTIMATE	.035	.035				
ACTUAL OBLIGATIONS	.019					

FIGURE WS6

FIGURE WS6 - WELDON SPRING CHEMICAL PLANT PROJECT RDTE PROGRAM BUDGET

THE \$.035 MILLION SHOWN HERE REPRESENTS THE FY75 YEAR-END MONEY MADE AVAILABLE TO ACCOMPLISH THE INTERIM ASSESSMENT. NO ADDITIONAL RDTE REQUIREMENTS ARE PRESENTLY ENVISIONED AS THE TECHNOLOGY FOR RADIOLOGICAL DECONTAMINATION IS ALREADY ESTABLISHED. HOWEVER, SHOULD THE RESULTS OF THE DETAILED SURVEY REVEAL ANY SIGNIFICANT HAZARDOUS CHEMICAL CONTAMINATION WHICH WOULD REQUIRE EXPANSION OF THE TECHNOLOGY BASE, ADDITIONAL ESTIMATES FOR RDTE FUNDS WILL BE DEVELOPED.

WELDON SPRING CHEMICAL PLANT PROJECT

OMA PROGRAM BUDGET

(CONSTANT \$ IN MILLIONS)

	PRIOR YEAR FY75	CURRENT YEAR FY76	FY77	BUDGET YEAR FY77	OUT YEARS FY78-82	TO COMPLETE
APPROVED PROGRAM ESTIMATED	.900			.900		
ADDITIONS (+) DELETIONS (-)						
TOTAL PM ESTIMATE	.900			.900		
ACTUAL OBLIGATIONS	0					

FIGURE WS7

FIGURE WS7 - WELDON SPRING CHEMICAL PLANT PROJECT OMA PROGRAM BUDGET

THE ONLY CURRENTLY PROGRAMMED OMA REQUIREMENT IS FOR EXECUTION OF A DETAILED SURVEY AND ASSESSMENT IN FY77. AS PREVIOUSLY INDICATED, THIS IS DEPENDENT ON RECEIPT OF HQDA DIRECTION TO PROCEED.

WELDON SPRING CHEMICAL PLANT PROJECT

PROJECT MANAGER'S EVALUATION

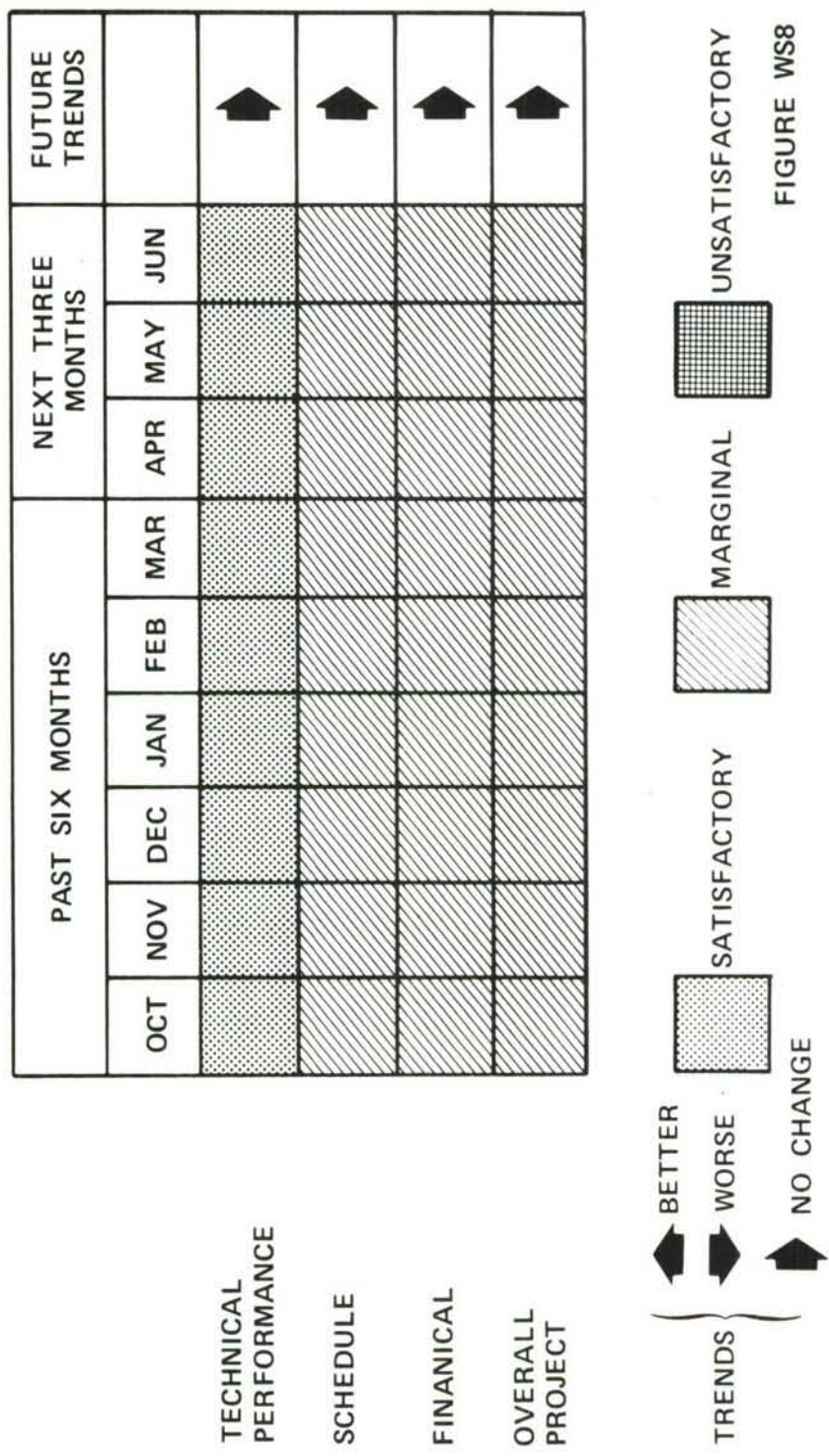


FIGURE WS8 - WELDON SPRING CHEMICAL PLANT PROJECT - PROJECT MANAGER'S EVALUATION

OVERALL THE STATUS OF THE WELDON SPRING CHEMICAL PLANT PROJECT REMAINS MARGINAL PENDING THE OUTCOME OF ARMY/ERDA NEGOTIATIONS ON JURISDICTIONAL AND FINANCIAL RESPONSIBILITIES FOR THE PROJECT WHICH ARE CURRENTLY BEING PURSUED AT THE ARMY SECRETARIAT LEVEL.

TECHNICAL PERFORMANCE CONTINUES TO BE SATISFACTORY AS THE INTERIM ASSESSMENT PHASE HAS BEEN COMPLETED WITHIN VERY STRICT FUNDING CONSTRAINTS. BOTH SCHEDULE AND FINANCIAL ASPECTS OF THE PROJECT ARE DEPENDENT ON THE OUTCOME OF THE ARMY/ERDA NEGOTIATIONS AND THUS REMAIN MARGINAL.

PINE BLUFF ARSENAL PROJECT

FIGURE PB1

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FIGURE PB1 - PINE BLUFF ARSENAL PROJECT

IN THE LAST RECAP, PINE BLUFF ARSENAL WAS DISCUSSED AS A PART OF THE OTHER SITE ASSESSMENTS PROJECT AS AT THAT TIME, THE PINE BLUFF ARSENAL EFFORT HAD NOT BEEN FORMALLY ASSIGNED TO THE OFFICE OF THE PROJECT MANAGER. AS PREVIOUSLY MENTIONED, THE PINE BLUFF ARSENAL PROJECT HAS NOW BEEN FORMALLY ASSIGNED TO PM-CDIR AND IS NOW BEING INTEGRATED INTO THE OVERALL INSTALLATION RESTORATION PROGRAM AS A SEPARATE PROJECT. THEREFORE, COMMENCING WITH THIS RECAP, THE PINE BLUFF ARSENAL PROJECT WILL BE DISCUSSED SEPARATELY.

PINE BLUFF ARSENAL OCCUPIES A SITE OF 15,000 ACRES IN CENTRAL ARKANSAS. SINCE 1942, THE INSTALLATION HAS BEEN USED FOR A VARIETY OF MANUFACTURING, FILLING, AND STORAGE OPERATIONS INVOLVING CHEMICALS AND MUNITIONS. THE PRINCIPAL CHEMICALS INVOLVED WERE WHITE PHOSPHORUS, PYROTECHNICS, CS RIOT CONTROL AGENTS, INCAPACITATING AGENTS, INCENDIARY MIXES, MUSTARD, LEWISITE, CHLORINE, CAUSTIC SODA, AND DDT.

IN FY74, THE ARSENAL INSTITUTED A SURVEY OF SOME 33 AREAS SUSPECTED OF CONTAINING ONE OR MORE CONTAMINANTS RELATED TO PREVIOUS OPERATIONS. THESE AREAS CONSIST OF DISPOSAL/BURNING AREAS, STORAGE AREAS, BURIAL SITES, OPEN TEST SITES, AND ABANDONED MANUFACTURING SITES. THE PURPOSE OF THE SURVEY WAS TO IDENTIFY WHICH AREAS WERE CONTAMINATED AND TO WHAT DEGREE, BY TYPE, CONCENTRATION, AND EXTENT. IN THE COURSE OF THIS SURVEY, IT WAS DETERMINED THAT DDT WAS MIGRATING OFF THE INSTALLATION THROUGH SURFACE DRAINAGE IN EXCESS OF FEDERAL (EPA) STANDARDS, AND A DDT CONTAINMENT PROGRAM WAS BEGUN.

**PINE BLUFF ARSENAL
PROJECT TASK LIST**

TASK	STATUS
ON-POST CONTAMINATION SURVEY	CONTINUING
DDT CONTAINMENT	CONTINUING

FIGURE PB2

FIGURE PB2 - PINE BLUFF ARSENAL PROJECT TASK LIST

SHOWN HERE IS THE INITIAL TASK LIST FOR THE PINE BLUFF ARSENAL PROJECT. THE TASKS LISTED REPRESENT ACTIVITIES THAT WERE ONGOING AT PINE BLUFF ARSENAL PRIOR TO ASSUMPTION OF THE EFFORT BY THE PROJECT MANAGER. THESE TASKS WILL BE INTEGRATED INTO AN OVERALL CONTAMINATION MIGRATION CONTROL PROGRAM NOW BEING DEVELOPED. IN ADDITION TO DDT CONTAINMENT, THIS OVERALL PROGRAM WILL INCLUDE A SURVEY AND ASSESSMENT OF OTHER MIGRATING CONTAMINANTS BOTH SURFACE AND SUBSURFACE AND IMPLEMENTATION OF CONTAINMENT/TREATMENT SYSTEMS TO ELIMINATE OR REDUCE THIS CONTAMINATION.

PINE BLUFF ARSENAL PROJECT HIGHLIGHTS

ACTIVITIES SINCE LAST RECAP

- PBA EFFORT FORMALLY ASSUMED
- CONTINUED DDT CONTAINMENT
- COMPLETED SOIL PERMEABILITY STUDY

ACTIVITIES NEXT THREE MONTHS

- COMPLETE ON-POST CONTAMINATION SURVEY
- CONTINUE DDT CONTAINMENT

PROBLEMS

- NO SIGNIFICANT PROBLEMS

FIGURE PB3

FIGURE PB3 - PINE BLUFF ARSENAL PROJECT HIGHLIGHTS

ACTIVITIES SINCE LAST RECAP

PBA EFFORT FORMALLY ASSUMED

SINCE FY1974, PINE BLUFF ARSENAL HAS BEEN CARRYING OUT A PROGRAM TO DETERMINE THE PROFILE OF SURFACE CONTAMINATION OF ITS LANDS. ON 4 FEBRUARY 1976, THE US ARMY ARMAMENT COMMAND (ARMCOM) REQUESTED THAT THE OFFICE OF THE PROJECT MANAGER ASSUME RESPONSIBILITY FOR THE TECHNICAL DIRECTION OF THE PINE BLUFF ARSENAL EFFORT. DARCOM CONCURRED IN THIS ACTION ON 20 FEBRUARY 1976. THE PROJECT MANAGER'S OFFICE WILL CONTINUE THE PINE BLUFF ARSENAL PROGRAM AND SUPPLEMENT IT WITH A PRELIMINARY INVESTIGATION OF THE CONTAMINANT SITUATION AT THE BOUNDARY, BOTH SURFACE AND SUBSURFACE.

CONTINUED DDT CONTAINMENT

UNDER THE PREVIOUS PINE BLUFF ARSENAL PROGRAM, A TOTAL OF 33 CONTAMINATED AREAS ARE BEING SURVEYED. THE SURVEY IS APPROXIMATELY 90% COMPLETE. AS INDICATED PREVIOUSLY, DDT WAS DETERMINED BY THIS SURVEY TO BE MIGRATING OFF THE ARSENAL IN EXCESS OF EPA STANDARDS. IN CONTRAST TO OTHER CONTAMINANTS, THERE ARE EPA-PREScribed STANDARDS FOR DDT IN WATER. A PROJECT TO CONTAIN THIS MIGRATION WAS INITIATED IN CONJUNCTION WITH EDGEWOOD ARSENAL AND THE US ARMY ENVIRONMENTAL HYGIENE AGENCY. TWO TASKS HAVE BEEN DEFINED WITHIN THIS PROJECT. IN THE FIRST TASK, INITIATED IN JULY 1975, A STREAM WHICH HAD CUT INTO AN OLD SANITARY LANDFILL WAS REROUTED, THE OLD STREAM BED WAS FILLED, COMPACTED AND RESURFACED

PINE BLUFF ARSENAL PROJECT HIGHLIGHTS

ACTIVITIES SINCE LAST RECAP

- PBA EFFORT FORMALLY ASSUMED
- CONTINUED DDT CONTAINMENT
- COMPLETED SOIL PERMEABILITY STUDY

ACTIVITIES NEXT THREE MONTHS

- COMPLETE ON-POST CONTAMINATION SURVEY
- CONTINUE DDT CONTAINMENT

PROBLEMS

- NO SIGNIFICANT PROBLEMS

FIGURE PB3

FIGURE PB3 - PINE BLUFF ARSENAL PROJECT HIGHLIGHTS

CONTINUED DDT CONTAINMENT (CONTINUED)

AND THE LANDFILL WAS RESEALED. THIS TASK IS COMPLETE EXCEPT FOR SOME ADDITIONAL RIP-RAP ALONG THE RELOCATED STREAM AND SOME ADDITIONAL RESEEDING. IN THE SECOND TASK, THE US ARMY ENVIRONMENTAL HYGIENE AGENCY HAS DEFINED MEASURES TO COLLECT AND STORE DDT CONTAMINATION NOW ENCRUSTED ON THE GROUND SURFACE AND MIGRATING DOWN STREAM AND OFF-POST DURING HEAVY RAINS. THESE MEASURES CALL FOR THE CONSTRUCTION OF TWO SEDIMENT-RETENTION BASINS FOR STORING THE CONCENTRATED DDT. THE BASIN AREAS WILL THEN BE COVERED OVER, COMPACTED, AND RESURFACED FOR PROPER DRAINAGE. THIS TASK, WHICH WILL REQUIRE TWO YEARS FOR COMPLETION AND ANOTHER TWO YEARS FOR PERIODIC RECLEANING OF THE SEDIMENT-RETENTION BASINS, BEGAN ON 17 FEBRUARY 1976.

COMPLETED SOIL PERMEABILITY STUDY

PINE BLUFF ARSENAL HAS ENGAGED THE CORPS OF ENGINEERS, WATERWAYS EXPERIMENT STATION (WES), AT VICKSBURG, MISSISSIPPI, TO INVESTIGATE THE GEOLOGICAL AND HYDROLOGICAL CONFIGURATION OF ITS LANDS. A STUDY OF THE SURFACE AND SUBSURFACE SOIL CHARACTERISTICS HAS BEEN COMPLETED. A MORE EXTENSIVE EXAMINATION OF THE UNDERGROUND WATER SYSTEM WILL FOLLOW, TO DETERMINE IF CONTAMINATION IS MIGRATING OFF-POST IN THE GROUNDWATER AND TO DETERMINE IF IN-PLACE CONTAINMENT OF DDT IS A SUITABLE METHOD FOR LONG-TERM STORAGE.

PINE BLUFF ARSENAL PROJECT HIGHLIGHTS

ACTIVITIES SINCE LAST RECAP

- PBA EFFORT FORMALLY ASSUMED
- CONTINUED DDT CONTAINMENT
- COMPLETED SOIL PERMEABILITY STUDY

ACTIVITIES NEXT THREE MONTHS

- COMPLETE ON-POST CONTAMINATION SURVEY
- CONTINUE DDT CONTAINMENT

PROBLEMS

- NO SIGNIFICANT PROBLEMS

FIGURE PB3

FIGURE PB3 - PINE BLUFF ARSENAL PROJECT HIGHLIGHTS

ACTIVITIES NEXT THREE MONTHS

THE SURVEY TO IDENTIFY THE SURFACE CONCENTRATION OF CONTAMINANTS WILL BE COMPLETED. THE CONSTRUCTION OF THE SEDIMENT RETENTION BASINS FOR DDT-CONTAINMENT WILL CONTINUE. PLANNING FOR THE INVESTIGATION OF THE ARSENAL'S GROUNDWATER SYSTEM, AND THE MIGRATION OF CONTAMINATION OFF-ARSENAL BY THAT MEANS, WILL BEGIN.

PROBLEMS

THERE ARE NO SIGNIFICANT PROBLEMS.

PINE BLUFF ARSENAL PROJECT ESTIMATED PROGRAM BUDGET

(CONSTANT DOLLARS IN MILLIONS)

APPROPRIATION	LAST RECAP	THIS RECAP	DIFFERENCE
OMA	(-0-)	(1.430)	(+1.430)
DDT CONTAINMENT	-0-	.960	+.960
DATA REDUCTION	-0-	.470	+.470
GRAND TOTAL	-0-	1.430	+1.430

FIGURE PB5

FIGURE PB5 - PINE BLUFF ARSENAL PROJECT PROGRAM BUDGET

THIS CHART IDENTIFIES REQUIREMENTS FOR THE ACCOMPLISHMENT OF THE PINE BLUFF ARSENAL PROJECT. FUNDING WAS PREVIOUSLY INCLUDED IN THE OTHER SITES ASSESSMENTS PROJECT. BUDGETED AMOUNTS SUPPORT THE EXECUTION OF EFFORTS TO EVALUATE DATA PREVIOUSLY OBTAINED IN A COMPREHENSIVE SURVEY AND THE CONTAINMENT OF DDT CONTAMINATION.

SUPPORT FOR ADDITIONAL AND/OR FOLLOW-ON WORK WILL BE INCORPORATED IN THE OVERALL INSTALLATION RESTORATION PROGRAM BUDGET AS THE REQUIREMENTS OF THIS NEWLY ASSIGNED RESPONSIBILITY ARE DEFINITIZED.

PINE BLUFF ARSENAL PROJECT **OMA PROGRAM BUDGET**

(CONSTANT \$ IN MILLIONS)

	PRIOR YEAR FY75	CURRENT YEAR FY76	FY77	BUDGET YEAR FY77	OUT YEARS FY78-82	TO COMPLETE
APPROVED PROGRAM ESTIMATED	1.430	.714	.180	.536	AE BD	AE BD
ADDITIONS (+) DELETIONS (-)						
TOTAL PM ESTIMATE	1.430	.714	.180	.536	AE BD	AE BD
ACTUAL OBLIGATIONS	.518					

FIGURE PB6

FIGURE PB6 - PINE BLUFF ARSENAL PROJECT OMA PROGRAM BUDGET

THIS CHART REFLECTS OMA REQUIREMENTS FOR SUPPORT OF ONGOING WORK AT PINE BLUFF ARSENAL TO CONTAIN
DDT AND CONDUCT THE GEOHYDRAULIC SURVEY.

PINE BLUFF ARSENAL PROJECT

PROJECT MANAGER'S EVALUATION

	PAST SIX MONTHS						NEXT THREE MONTHS			FUTURE TRENDS
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	
TECHNICAL PERFORMANCE										↑
SCHEDULE										↑
FINANCIAL										↑
OVERALL PROJECT										↑

TECHNICAL
PERFORMANCE

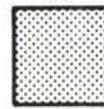
SCHEDULE

FINANCIAL

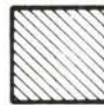
OVERALL
PROJECT

TRENDS

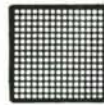
↑ BETTER
 → WORSE
 ↓ NO CHANGE



SATISFACTORY



MARGINAL



UNSATISFACTORY

FIGURE PB7

FIGURE PB7 - PINE BLUFF ARSENAL PROJECT - PROJECT MANAGER'S EVALUATION

THE PINE BLUFF ARSENAL PROJECT IS CATEGORIZED AS SATISFACTORY. THE PREVIOUS ONGOING PINE BLUFF ARSENAL EFFORTS ARE BEING INTEGRATED INTO THE OVERALL INSTALLATION RESTORATION PROGRAM.

OTHER SITE ASSESSMENTS PROJECT

FIGURE OS1

FIGURE OS1 - OTHER SITE ASSESSMENTS PROJECT

THIS PROJECT INVOLVES AN ASSESSMENT OF SELECTED ARMY INSTALLATIONS WHICH OVER THE YEARS HAVE BECOME CONTAMINATED AS A RESULT OF VARIOUS MANUFACTURING, DEMILITARIZATION, STORAGE, PROPERTY DISPOSAL, AND RELATED ACTIVITIES INVOLVING CHEMICAL, BIOLOGICAL, AND RADIOLOGICAL MATERIAL. THESE INSTALLATIONS MUST BE SURVEYED TO IDENTIFY CONTAMINANTS WITHIN THEIR BOUNDARIES, AND TO DETECT OFF-POST MIGRATION OF CONTAMINANTS WHICH COULD ENDANGER SURROUNDING COMMUNITIES. THE SERIOUSNESS OF THIS SITUATION IS GROWING IN PROPORTION TO THE PROGRESSIVE ENCROACHMENT OF CIVILIAN COMMUNITIES TO THE BORDERS OF SEVERAL PREVIOUSLY ISOLATED INSTALLATIONS. CERTAIN OF THE INSTALLATIONS HAVE ALREADY BECOME THE OBJECT OF CONSIDERABLE PUBLIC INTEREST BECAUSE OF CONTAMINATION POSING ACTUAL OR POTENTIAL HAZARDS TO SURROUNDING COMMUNITIES. SOME OF THIS PROPERTY IS SCHEDULED FOR NEW USES, TO INCLUDE RELEASE TO PUBLIC DOMAIN.

INITIAL PHASES OF THE PROJECT ARE, THEREFORE, DESIGNED TO IDENTIFY AND PRIORITIZE THESE INSTALLATIONS BASED ON THE TYPE AND DEGREE OF PRESENT OR SUSPECTED CONTAMINATION, IMMEDIACY OF RELEASE OF THE PROPERTY FOR OTHER USES, AND/OR THE DANGER OF MIGRATION OF CONTAMINANTS BEYOND INSTALLATION BOUNDARIES.

OTHER SITE ASSESSMENTS PROJECT

TASK LIST

TASK	STATUS
RECORDS RESEARCH AND PERSONNEL INTERVIEWS	PLANNING/TEAM SELECTION
PRELIMINARY SURVEY	PLANNING
	FIGURE OS2

FIGURE OS2 - OTHER SITE ASSESSMENTS PROJECT TASK LIST

SHOWN ABOVE ARE THE TASKS ASSOCIATED WITH THE OTHER SITE ASSESSMENTS PROJECT. THE FIRST TASK CONSISTS ESSENTIALLY OF A BACKGROUND INVESTIGATION OF A PARTICULAR SITE. BASED ON THE RESULTS OF THE RECORDS RESEARCH, SITES REQUIRING ADDITIONAL INVESTIGATION WILL BE SELECTED AND SITE PLANS WILL BE FORMULATED FOR THE CONDUCT OF THE PRELIMINARY SURVEY. THIS SURVEY INVOLVES A MORE DETAILED STUDY TO DETERMINE THE EXTENT OF CONTAMINATION MIGRATION, THE POTENTIAL THREAT TO THE SURROUNDING COMMUNITY, AND THE SCOPE OF THE RESTORATION EFFORT REQUIRED IF PROPERTY RELEASE IS PLANNED. THE PRELIMINARY SURVEY RESULTS WILL PROVIDE THE BASIS FOR A RECOMMENDATION TO HQDA AS TO WHAT EXTENT CONTAINMENT/RESTORATION SHOULD BE UNDERTAKEN. UPON HQDA APPROVAL TO CONDUCT A PROGRAM AT A PARTICULAR SITE, THAT SITE WILL BE DROPPED AS A TASK UNDER "OTHER SITE ASSESSMENTS" AND WILL BECOME A SEPARATE TASK UNDER THE OVERALL INSTALLATION RESTORATION PROGRAM.

CURRENT PLANNING CALLS FOR CONDUCTING A RECORDS RESEARCH PROGRAM BEGINNING IN FY77 AT THOSE INSTALLATIONS SUSPECTED OF HAVING AN OFF-POST MIGRATION PROBLEM. THIS EFFORT WILL TAKE SOME 18 MONTHS TO COMPLETE AND WILL INVOLVE APPROXIMATELY 24-26 INSTALLATIONS. IT IS ALSO PLANNED TO CONDUCT APPROXIMATELY SEVEN PRELIMINARY SURVEYS DURING FY77.

OTHER SITE ASSESSMENTS

PROJECT HIGHLIGHTS

ACTIVITIES SINCE LAST RECAP

- DEVELOPMENT OF PRIORITIZED DA INSTALLATION LIST
 - INITIAL EFFORT ON DARCOM INSTALLATIONS
 - EXPANSION TO COVER OTHER DA INSTALLATIONS

ACTIVITIES NEXT THREE MONTHS .

- RECORDS RESEARCH TEAM SELECTION
- INSTALLATION PRIORITY LIST EXPANSION
- DETERMINATION OF RESOURCE REQUIREMENTS

PROBLEMS

- FUNDING

FIGURE OS3

FIGURE OS3 - OTHER SITE ASSESSMENTS PROJECT HIGHLIGHTS

ACTIVITIES SINCE LAST RECAP

DEVELOPMENT OF PRIORITIZED DA INSTALLATION LIST

EFFORTS HAVE CONTINUED TO DEVELOP A PRIORITIZED LIST OF INSTALLATIONS SUSPECTED OF CONTAINING CONTAMINATION. THE EFFORT WAS INITIALLY DIRECTED TOWARD DARCOM INSTALLATIONS WHERE THE MAJORITY OF THE CONTAMINATION IS SUSPECTED TO EXIST. THIS EFFORT WAS LATER EXPANDED TO INCLUDE INSTALLATIONS FROM OTHER MAJOR ARMY COMMANDS. WHEN ALL INSTALLATIONS ARE IDENTIFIED, A COMBINED LIST WILL BE COMPILED TO DETERMINE THE PRIORITY IN WHICH ASSESSMENTS SHOULD BE CONDUCTED. TWO PRIORITY CATEGORIES HAVE BEEN ESTABLISHED: THOSE INSTALLATIONS THAT ARE SCHEDULED FOR RELEASE OR WHERE CONTAMINATION MIGRATION IS SUSPECTED, AND THOSE INSTALLATIONS WHERE THE CONTAMINATION IS THOUGHT TO BE CONFINED WITHIN INSTALLATION BOUNDARIES.

ACTIVITIES NEXT THREE MONTHS

A RECORDS RESEARCH TEAM WILL BE FORMED TO CONDUCT INITIAL BACKGROUND INVESTIGATIONS OF SITES IN ACCORDANCE WITH THE PRIORITY LISTING OF INSTALLATIONS. INITIATION OF THIS EFFORT IS SCHEDULED IN THE NEXT THREE MONTHS PROVIDED FUNDS ARE MADE AVAILABLE.

OTHER SITE ASSESSMENTS

PROJECT HIGHLIGHTS

ACTIVITIES SINCE LAST RECAP

- DEVELOPMENT OF PRIORITIZED DA INSTALLATION LIST
 - INITIAL EFFORT ON DARCOM INSTALLATIONS
 - EXPANSION TO COVER OTHER DA INSTALLATIONS

ACTIVITIES NEXT THREE MONTHS

- RECORDS RESEARCH TEAM SELECTION
- INSTALLATION PRIORITY LIST EXPANSION
- DETERMINATION OF RESOURCE REQUIREMENTS

PROBLEMS

- FUNDING

FIGURE OS3

FIGURE OS3 - OTHER SITE ASSESSMENTS PROJECT HIGHLIGHTS

ACTIVITIES NEXT THREE MONTHS (CONTINUED)

A COMBINED PRIORITY LIST FOR ASSESSMENT WILL BE COMPLETED AFTER INPUTS ARE RECEIVED FROM OTHER

MAJOR COMMANDS.

DETAILED COST ESTIMATES FOR RECORDS RESEARCH AND PRELIMINARY SURVEYS WILL BE DEVELOPED.

PROBLEMS

LACK OF FUNDING HAS CAUSED INITIATION OF THE RECORDS RESEARCH EFFORT TO BE DEFERRED UNTIL FY77, THEREBY PRECLUDING EARLIER IDENTIFICATION OF POTENTIAL MIGRATION PROBLEMS. UNFINANCED REQUIREMENTS TO INITIATE THIS EFFORT IN FY76 HAVE BEEN SUBMITTED.

OTHER SITE ASSESSMENTS PROJECT ESTIMATED PROGRAM BUDGET

(CONSTANT \$ IN MILLIONS)

APPROPRIATION	LAST RECAP	THIS RECAP	DIFFERENCE
OMA	(3.630)	(2.765)	(-.865)
OTHER SITE ASSESSMENTS	3.630	2.765	-.865
GRAND TOTAL	3.630	2.765	-.865

FIGURE OS5

FIGURE OS5 - OTHER SITE ASSESSMENTS PROJECT PROGRAM BUDGET

THIS CHART IDENTIFIES FUNDING REQUIREMENTS FOR ACCOMPLISHMENT OF THE OTHER SITE ASSESSMENTS PROJECT. THE PROGRAM DECREASE OF \$.865 MILLION PRIMARILY REPRESENTS THE NET EFFECT OF ESTABLISHING PINE BLUFF ARSENAL AS A SEPARATE PROJECT AND EXTENDING THE OTHER SITE ASSESSMENTS EFFORT THROUGH FY82. THIS FUNDING REQUIREMENT IS SUBJECT TO UPWARD ADJUSTMENT AS THE SCOPE AND URGENCY OF THE OTHER SITE ASSESSMENTS PROJECT IS BETTER DEFINED. THE TOTAL EXTENT OF THE PROJECT WILL NOT BE KNOWN UNTIL THE RECORDS RESEARCH AND PRELIMINARY ASSESSMENTS ARE MADE FOR THE IDENTIFIED INSTALLATIONS.

OTHER SITE ASSESSMENTS PROJECT

OMA PROGRAM BUDGET

(CONSTANT \$ IN MILLIONS)

	PRIOR YEAR FY75	CURRENT YEAR FY76	FY7T	BUDGET YEAR FY77	OUT YEARS FY78-82	TO COMPLETE
APPROVED PROGRAM ESTIMATED	2.550	0	.150	.400	2.000	AE BD
ADDITIONS (+) DELETIONS (-)	.215	.215				
TOTAL PM ESTIMATE	2.765	.215	.150	.400	2.000	AE BD
ACTUAL OBLIGATIONS	0					

FIGURE OS6

FIGURE OS6 - OTHER SITE ASSESSMENTS PROJECT OMA PROGRAM BUDGET

OMA PROGRAM REQUIREMENTS FOR THE OTHER SITE ASSESSMENTS PROJECT SUPPORT PRIMARILY THE INITIAL (RECORDS RESEARCH AND PERSONNEL INTERVIEWS) EFFORT. INITIATION OF THIS PROJECT IN FY76 HAS BEEN DELAYED DUE TO FUNDING LIMITATIONS. EARLY STARTUP OF THE OTHER SITE ASSESSMENTS PROJECT IS DEPENDENT UPON RECEIPT OF \$.215 MILLION WHICH HAS BEEN REQUESTED.

OTHER SITE ASSESSMENTS PROJECT

PROJECT MANAGER'S EVALUATION

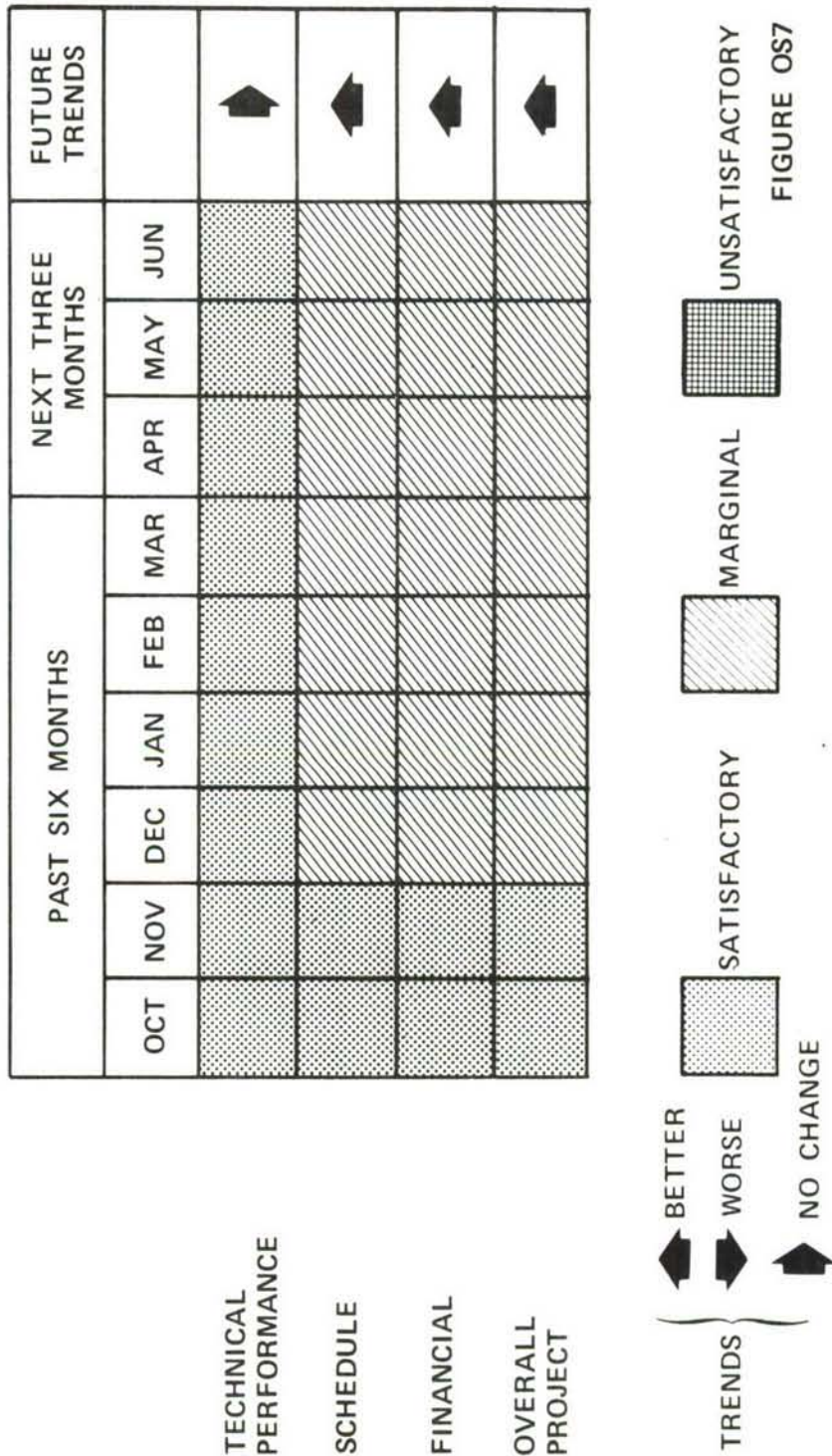


FIGURE OS7

FIGURE OS7 - OTHER SITE ASSESSMENTS PROJECT - PROJECT MANAGER'S EVALUATION

OVERALL THE OTHER SITE ASSESSMENTS PROJECT IS EVALUATED AS MARGINAL. THIS RATING IS ATTRIBUTABLE TO THE FACT THAT FUNDING HAS NOT BEEN PROVIDED AS ANTICIPATED. THIS CONDITION IS EXPECTED TO IMPROVE BY 1 JULY 1976 AS FUNDS ARE PROGRAMMED FOR THIS EFFORT IN FY77. SCHEDULE IS ALSO MARGINAL DUE TO FUNDING LIMITATIONS. TECHNICAL PERFORMANCE REMAINS SATISFACTORY.

INSTALLATION RESTORATION PROGRAM OVERALL FUNDING SUMMARY

(CONSTANT \$ IN MILLIONS)

RESTORATION PROJECTS	FY75	FY76	FY77	FY78-82	TO COMPLETE	TOTAL
ROCKY MOUNTAIN ARSENAL	1.425	2.718	.719	9.098	64.224	AEBD 78.184
WELDON SPRING CHEMICAL PLANT	.035	0	0	.900	AEBD	AEBD .935
PINE BLUFF ARSENAL	0	.714	.180	.536	AEBD	AEBD 1.430
OTHER SITE ASSESSMENTS	0	.215	.150	.400	AEBD	AEBD 2.765
PROGRAM MANAGEMENT	.040	.370	.120	1.130	AEBD	AEBD 15.733
SUMMARY	1.500	4.017	1.169	12.064	AEBD	AEBD 99.047

FIGURE 3

FIGURE 3 - INSTALLATION RESTORATION PROGRAM FUNDING SUMMARY

THIS CHART SUMMARIZES FUNDING REQUIREMENTS FOR THE INSTALLATION RESTORATION PROGRAM. THE \$99.047 MILLION REPRESENTS A COMPILATION OF THE PROGRAM REQUIREMENTS PREVIOUSLY ADDRESSED WITH THE ADDITION OF PROGRAM MANAGEMENT REQUIREMENTS WITHIN THE OFFICE OF THE PROJECT MANAGER.

THE MAJORITY OF THE FUNDING REQUIREMENTS IDENTIFIED ARE ASSOCIATED WITH THE PHASE I SURVEY AND TECHNOLOGY ACQUISITION EFFORT FOR THE ROCKY MOUNTAIN ARSENAL PROJECT. RDTE FUNDING LEVELS IN THE NEAR TERM ARE LIMITED TO SUPPORT THOSE PROGRAM ASPECTS CONCERNED WITH CONTROL OF CONTAMINANTS MIGRATING OFF POST AND RELATED TECHNOLOGY. AS A RESULT, WORK RELATED SOLELY TO DEVELOPMENT OF A TECHNOLOGY BASE FOR INSTALLATION RESTORATION IS BEING DEFERRED. ESTIMATES FOR PHASES II AND III ARE DEPENDENT UPON THE RESULTS OF THE SURVEY AND TECHNOLOGY ACQUISITION PHASE. ADDITIONALLY, PROGRAM REQUIREMENTS WILL INCREASE AS NEW SITES ARE ASSIGNED FOR RESTORATION, REQUIRING EXPANSION OF THE TECHNOLOGY DEVELOPMENT EFFORT.

CURRENT BUDGETING FOR THE WELDON SPRING CHEMICAL PLANT PROJECT PROVIDES ONLY FOR A DETAILED SURVEY/ASSESSMENT OF THE PLANT IN FY77; HOWEVER, ACTUAL INITIATION OF THE DETAILED SURVEY/ASSESSMENT IS DEPENDENT UPON DA DIRECTION TO PROCEED AND RECEIPT OF ASSOCIATED FUNDING. PLANNING FOR DECONTAMINATION/RESTORATION OF THE PLANT HAS BEEN SUSPENDED PENDING RESOLUTION OF NEGOTIATIONS BETWEEN THE ARMY AND

INSTALLATION RESTORATION PROGRAM OVERALL FUNDING SUMMARY

(CONSTANT \$ IN MILLIONS)

RESTORATION PROJECTS	FY75	FY76	FY77	FY78-82	TO COMPLETE	TOTAL
ROCKY MOUNTAIN ARSENAL	1.425	2.718	.719	64.224	AEBD	78.184
WELDON SPRING CHEMICAL PLANT	.035	0	0	AEBD	AEBD	.935
PINE BLUFF ARSENAL	0	.714	.180	AEBD	AEBD	1.430
OTHER SITE ASSESSMENTS	0	.215	.150	2.000	AEBD	2.765
PROGRAM MANAGEMENT	.040	.370	.120	14.073	AEBD	15.733
SUMMARY	1.500	4.017	1.169	80.297	AEBD	99.047

FIGURE 3

FIGURE 3 - INSTALLATION RESTORATION PROGRAM FUNDING SUMMARY

ERDA CONCERNING JURISDICTIONAL AND FINANCIAL RESPONSIBILITIES. SHOULD IT BE DETERMINED THAT THE ARMY IS SINGULARLY RESPONSIBLE FOR RESTORATION, AND RESTORATION EFFORTS ARE EVENTUALLY UNDERTAKEN, SIGNIFICANT ADDITIONAL REQUIREMENTS CAN BE EXPECTED IN THE OUTYEARS.

THE ESTIMATES SHOWN FOR PINE BLUFF ARSENAL RELATE ONLY TO PREVIOUS ONGOING ACTIVITIES AT THAT LOCATION RELATED TO SURVEY OF SOME 33 CONTAMINATED AREAS AND CONTROL OF OFF-POST DDT MIGRATION. ACTIONS ARE IN PROCESS TO DEFINE TECHNICAL AND PROGRAM REQUIREMENTS FOR THIS INSTALLATION BEYOND FY77.

REQUIREMENTS IDENTIFIED FOR THE OTHER SITE ASSESSMENTS PROJECT REPRESENT EFFORTS RELATED PRIMARILY TO DEVELOPMENT OF HARD DATA ON INSTALLATIONS WHICH HAVE POTENTIAL PROBLEMS OF MIGRATING CONTAMINANTS. UPWARD REVISION IN THESE ESTIMATES CAN BE EXPECTED AS THIS TASK IS BETTER DEFINED AND ADDITIONAL INSTALLATIONS ARE IDENTIFIED FOR ASSESSMENT.

ORGANIZATION AND MANNING OF THE INSTALLATION RESTORATION PROGRAM STAFF IN THE OFFICE OF THE PROJECT MANAGER IS BEING ACCOMPLISHED AT A DELIBERATE PACE WITH A VIEW TO ASSURE THE PROPER MIX OF TALENT AND AN ACCESSION RATE COMPATIBLE WITH THE PRIORITIES AND FUNDING OF ALL ASPECTS OF THE PROGRAM.

INSTALLATION RESTORATION PROGRAM

PROJECT MANAGER'S OVERALL EVALUATION

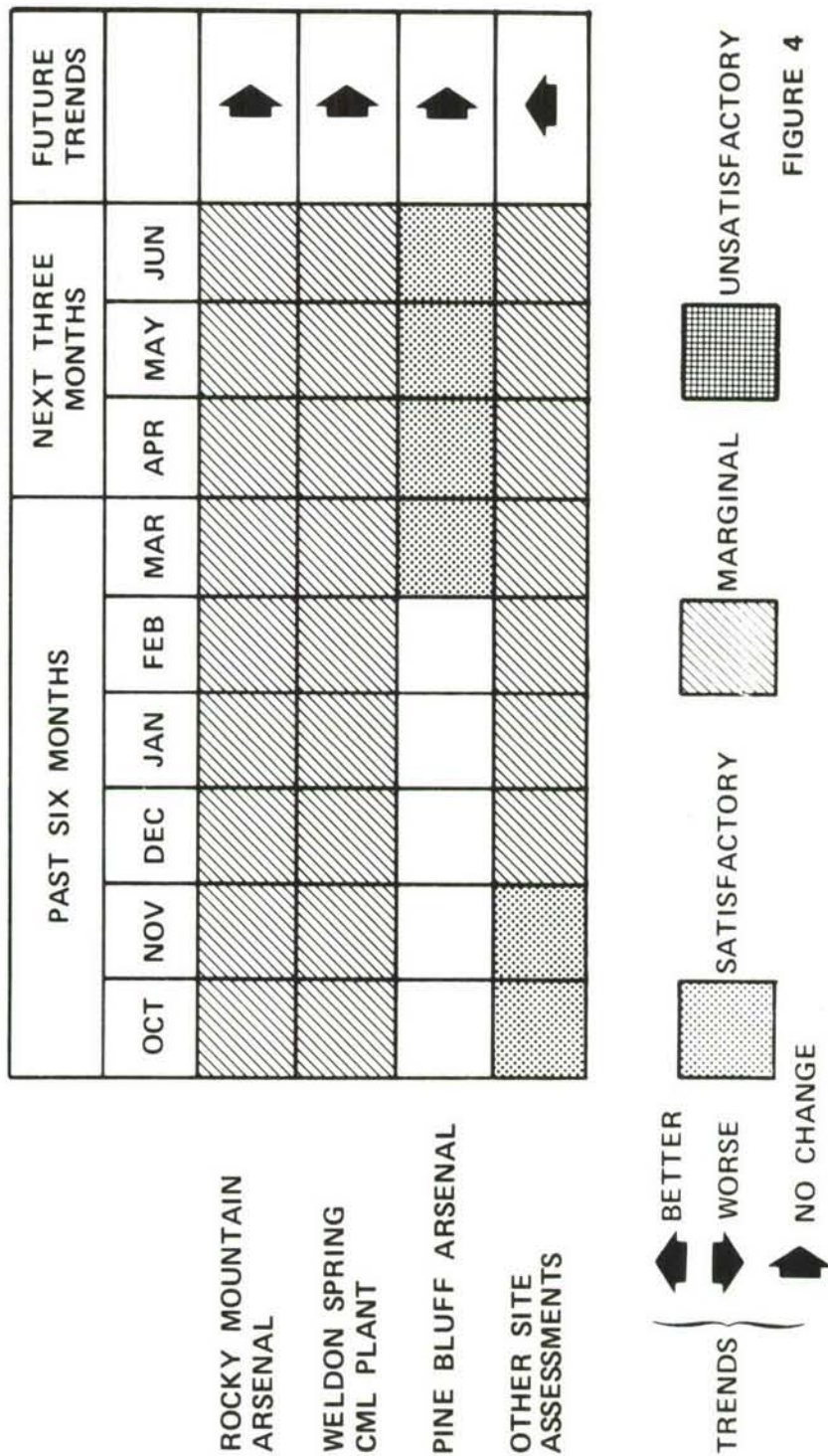


FIGURE 4

FIGURE 4 - INSTALLATION RESTORATION PROGRAM - PROJECT MANAGER'S OVERALL EVALUATION

THIS FIGURE REPRESENTS A COMPILATION OF THE EVALUATION CHARTS OF THE INDIVIDUAL PROJECTS ALREADY PRESENTED. TO SUMMARIZE SIGNIFICANT ACTIVITIES AND PROBLEMS:

THE ROCKY MOUNTAIN ARSENAL PROJECT HAS BEEN RESTRUCTURED TO EMPHASIZE THE CONTROL OF MIGRATING CONTAMINANTS. THREE ADDITIONAL MIGRATING CONTAMINANTS HAVE BEEN IDENTIFIED; HOWEVER, CURRENT RDTE FUNDING RESTRICTIONS WILL LIMIT DEVELOPMENT OF STANDARDS AND TREATMENT PROCESSES TO DIMP AND DCPD.

THE INTERIM ASSESSMENT OF WELDON SPRING CHEMICAL PLANT WAS COMPLETED AND SUBMITTED TO HQDA. FUTURE ACTIONS ARE DEPENDENT UPON HQDA DIRECTION TO PROCEED IN FY77 WITH A DETAILED SURVEY AND ASSESSMENT OF ALTERNATIVES FOR DISPOSITION OF THE PLANT. NO PROGRESS HAS BEEN MADE RELATIVE TO ARMY/ERDA NEGOTIATIONS REGARDING JURISDICTIONAL/FINANCIAL RESPONSIBILITIES AND THESE NEGOTIATIONS ARE EXPECTED TO RESUME AT THE ARMY SECRETARIAT LEVEL DURING THE NEXT RECAP PERIOD.

THE PINE BLUFF ARSENAL RESTORATION EFFORT HAS BEEN ASSUMED BY THE OFFICE OF THE PROJECT MANAGER AND IS BEING INTEGRATED INTO THE OVERALL INSTALLATION RESTORATION PROGRAM.

THE OTHER SITE ASSESSMENT PROJECT HAS BEEN MAINTAINED AT A LOW EFFORT PENDING RECEIPT OF FUNDS FOR FULL INITIATION OF THE RECORDS RESEARCH PHASE OF THE PROJECT.

FIGURE 4 - INSTALLATION RESTORATION PROGRAM - PROGRAM MANAGER'S OVERALL EVALUATION

THE OVERALL MAJOR PROBLEM WITHIN THE INSTALLATION RESTORATION PROGRAM REMAINS THE LACK OF FULL FUNDING SUPPORT, PARTICULARLY IN THE RDTE AREA. POTENTIAL CHANGES IN PROGRAM EMPHASIS INDICATED AT THE OSD LEVEL ALSO NEED TO BE FORMALIZED.